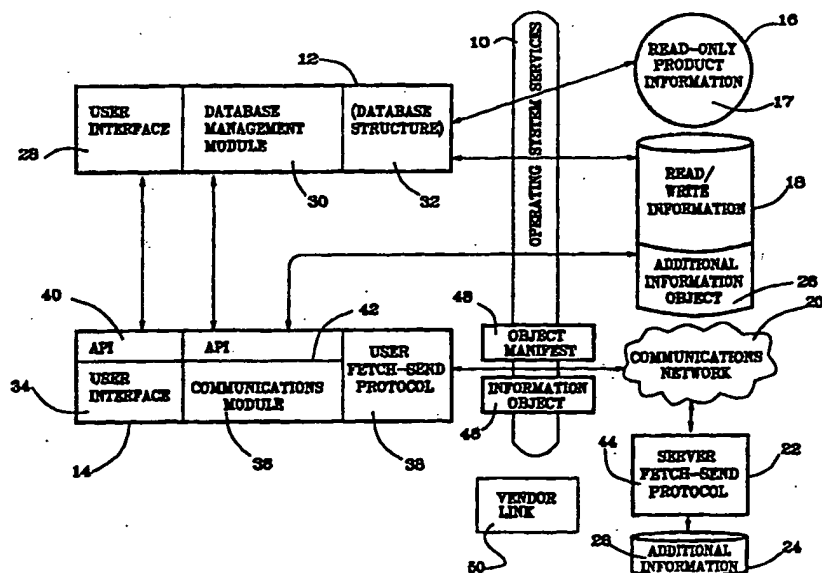




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(54) Title: COMPUTER-IMPLEMENTED TRANSPORT OF ELECTRONIC INFORMATION OBJECTS



(57) Abstract

A novel electronic information transport component (14) can be incorporated in a wide range of electronic information products, for example magazine collections, to automate the mass distribution of updates, such as current issues, from a remote server to a wide user base having a diversity of computer stations. Advantages of economy, immediacy and ease of use are provided. Extensions of the invention permit automated electronic catalog shopping with order placement and, optionally, order confirmation. A server based update distribution service and a sponsor pricing system for the Internet, or the like, is also provided.

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COMPUTER-IMPLEMENTED TRANSPORT OF
ELECTRONIC INFORMATION OBJECTS

TECHNICAL FIELD

5 The present invention relates to computer-implemented transport
of electronic information objects, employing information
transport software to transporting information objects between a
remote server and any one of multiple, uncoordinated intelligent
computer workstations. The invention provides a product-
10 embeddable computer-implemented software component for
distributing information objects from a remote source to a large
number, or mass market of customers or subscribers, and a
computer on which said component is implemented.

15 BACKGROUND

Electronic publication is an exploding industry in which
thousands of new products including magazines and periodicals,
software applications and utilities, video games, business,
legal and financial information and databases, encyclopedias and
20 dictionaries are purchased by millions of customers. Commonly,
such information products are replicated in computer-readable
form on magnetic or optical storage diskettes and are box-
packaged with printed manuals for distribution to retail stores
and direct mail sales. Such distribution methods suffer the
25 drawbacks of taking time and being relatively expensive. Time
lags of days or weeks to get a product into a consumer's hands
once it is created are inherent. Reference material on a CD-ROM
is usually out-of-date by the time the user receives a new disk.

30 Such drawbacks may be acceptable for original, high value
products such as software applications or collections of
publications, for example, NEWSWEEK® Interactive CD-ROM, or
disks, which provides a searchable audio-visual library of
issues of NEWSWEEK magazine and CINEMANIA® CD-ROM which provides
35 reviews and other information on newly released films or movies.
However, no convenient means exists for distributing time-
sensitive, low-value updates to such products, for example, the

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- 5 latest issue of Newsweek or last week's movie reviews, which by themselves may have a rather modest value. Distribution in stored form, on physical media, such as diskette, is slow and too expensive for a mere update.
- 10 To solve the problems of timeliness and low cost, electronic distribution from a central computer server to a subscriber's computer over common carriers or wide area networks is attractive. Such direct electronic distribution does not solve the problem of incorporating the received material with the
- 15 original material so that a fully integrated publication, information database or software program is obtained by the user.

- Another class of electronically distributed information product
- 20 comprises home shopping catalogues of mail order products distributed on optical or other digital data storage disks which may contain text, sound and images from printed catalogues or uniquely created material, for example software application demos. To applicant's knowledge and belief, available products
- 25 lack direct computer order placement capabilities, and require orders to be placed by voice call for example to a toll-free 800 number, after selections are made from an electronic catalog.

- Communication between remote computers, not directly
- 30 interconnected by umbilical cable or a wired network, is enabled by a wide range of hardware devices and software drivers, utilities, applications and application modules. Telephone modems that couple a computer with the telephone network are familiar devices. RF modems that couple computers into wireless
- 35 networks are less familiar but are beginning to appear in consumer devices known broadly as personal information communicators (PIC's) of which personal digital assistants (PDA's) such as Apple Corp.'s NEWTON® product are a first generation. New kinds of digital communications devices can be
- 40 expected to emerge as digital technology replaces analog transmission.

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5 General-purpose, online, modem-accessed, electronic information services, such as PRODIGY, COMPUSERVE and AMERICA ONLINE (trademarks), and some Internet services, provide widely available access to timely information products from a central server, but are limited and complex. They provide no means for
10 the integration of downloaded information with information products offered on disk or CD, and provide only rudimentary facilities for local viewing and search of downloaded files. Also they impose their interface on users which would prevent a publisher displaying their own proprietary interface, or
15 appearance via the service. Also, online services impose payment and signup requirements on would-be users which may be too expensive or cumbersome for many publishing projects.

Communications Products

20 Off-the-shelf communications software, for example, Datastorm Technologies, Inc.'s PROCOMM (trademark) and CENTRAL POINT COMMUTE (trademark) from Central Point Software, Inc. are commonly used to provide a variety of functions, including file transfers between, interactive sessions from, host-mode services
25 from, and remote computer management of, modem-equipped personal computers wired into the telephone network. Many such products with different versions and functions are in use. A publisher cannot know which particular product every customer has. Such products are too rich and expensive to provide freely with many
30 information products a publisher wishes to distribute.

Counterpoint Publishing's Federal Register publications

Counterpoint Publishing, (Cambridge MA) in brochures available to applicant in November 1993 offered electronic information
35 products entitled "Daily Federal Register" and "CD Federal Register". "Daily Federal Register" includes communications software and a high-speed modem. These are complex, expensive products customized for users of the Federal Register and not suitable for widespread application.

40

Apparently, the included communications software is a standard general purpose communications package with dialing scripts that are customized to the needs of the Federal Register products.

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- 5 Accordingly, the cost of a communications package license which may be as high as about \$100 at retail must be included with in the product cost. Also, Counterpoint Publishing appears to require the customer to buy its own own customized modem, with the product, building in a cost (about \$100-200) which renders
10 this approach quite unsuitable for mass-market distribution of low cost electronic information update products. Nor is the resulting product seamless either in its appearance or its operation because the communications software is separately invoked and used, and has its own user interface with a
15 disparate look and feel from that of the information product itself. These are expensive products that neither provide nor suggest solutions to electronic publishers problems of economic and timely mass distribution of product.
- 20 The "CD Federal Register" provides the Federal Register on CD-ROM at weekly intervals for \$1,950.00 annually and CD-ROM disks are shipped to customers as they become available. Back issues are \$125 each. Updates are provided by shipping a disk. While the two product "CD Federal Register" and "Daily Federal
25 Register" might be used together, at an additive cost, to provide a combination of archives on CD-ROM plus, daily updates obtained and stored until replaced by a new CD-ROM, based on information available to the present inventor it appears that the two products lack integration feaures and must be used
30 separately.

Xcellenet's "REMOTWARE"®

- Xcellenet Inc. in product brochures copyrighted 1992 and a price list dated August 16, 1993, for a "REMOTWARE"® product line,
35 offers a range of REMOTWARE® software-only products providing electronic information distribution to and from remote nodes of a proprietary REMOTWARE® computer network intended for use within an organized, corporate or institutional data processing or management information system. Although feature-rich, the
40 system is primarily server directed, rather than user initiated and requires an expensive program (priced at \$220.00) to run at the user's node whereas the present invention addresses consumer uses which will support costs of no more than a few dollars per

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5 user. REMOTEWARE® is too costly and complex for mass
distribution of updates to periodicals, cannot be shipped
invisibly with an electronic information product and requires
specialized server software and operations support that would
challenge all but the largest and most technically sophisticated
10 publishers. Accordingly, REMOTEWARE® is unsuitable for
widespread use as an economical means of distributing updates
for a variety of electronic information products.

At the date of this invention, such a customer base will
15 normally include an extensive variety of computers, operating
systems and communications devices, if the latter are present,
all of which may have their own protocols and configuration
requirements.

20 While an electronic information product vendor might consider
licensing or purchasing an existing commercial communications
product for distribution with their publication product to
enable remote, diskless updating, the high cost of such a
solution would generally be unacceptable because a communication
25 package includes a broad range of functionalities not required
for the vendor's particular purpose, for example, remote
keyboarding. Significantly, a commercial communications package
is not susceptible to customization of its user interface and
may have its own configuration requirements and installation
30 requirements, with regard to directories, device drivers and the
like, which are incompatible with other vendor or user
requirements or are simply a nuisance to the user. Thus, a
commercial communications product in addition to its cost,
cannot be satisfactorily integrated with an information product.

35 There is accordingly a need for computer-implementable
information transport software to enable simple, economical and
prompt mass distribution of electronic information products.
Furthermore, the mass market of computer users has a need for a
40 computer system or station which is capable of promptly and
economically obtaining updates of information products and of
integrating them with the original product.

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SUMMARY OF THE INVENTION

The present invention solves the problem of meeting these needs. On the one hand, it solves the problem of enabling simple, economical and prompt mass distribution of electronic information products to a wide customer base that may number
10 tens or hundreds of thousands, and in some cases, millions of consumers.

The invention solves this problem by providing a computer-implemented information transport software module usable with
15 any of multiple electronic information products for mass distribution of electronic information objects to users of a diversity of uncoordinated communications-equipped computer stations. The information transport software module is readily customized to an individual information product to have a user
20 interface in said information product for activation of automated transport of an information object between a remote object source and a user's computer station. The information transport module contains user communications protocols specifying user station functions of the automated object
25 transport and the object source is supplied with source communications protocols specifying source functions of the automated object transport. The source communications protocol is co-operative with the user communications protocol and knows the characteristics of the user communications protocol, so as
30 to be able to effect the information object transport in unattended mode after initiation.

In a valuable embodiment, the transporter contains multiple routing and protocol data enabling it to communicate with the
35 remote source via any one of a number of pathways, e.g. Internet, online, wide-area network or direct dial to the server, possibly using an 800 number, depending upon the facilities it finds at the user. Preferably, the transporter selects the most efficient pathway available.

40

In a preferred embodiment, for economy and simplicity, the information transport component is supplied for incorporation in an information product as a free-standing embeddable component

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5 comprising only such functionality as is required for the
information object transport operation as described herein.
By limiting its functionality to predetermined transport
operations, for example to information object transport between
the user's address and one or more pre-specified remote
10 addresses, or to transport of a pre-specified information object
or objects, or by making both such limitations, a lean and
efficient information transporter product can be provided. This
enables an information product vendor to supply an automated, or
unattended, update or other information transport facility to a
15 mass market of computer users without the complexity and expense
of proprietary network or communications software packages, or
of the vendor developing their own transport software.

Typical communications equipment comprises a modem, but other
20 cards and devices enabling remote communication between
computers may be used, such as devices or means permitting
communication in a digital rather than analog realm, for
example, ISDN or ATM interfaces when they become commercially
viable.

25 Preferably, the user communications protocols specify parameters
such as a source address, which may be a common carrier address,
such as a telephone number, and object parameters such as file
name or names, file size, location content and format are
30 specified, as appropriate, in either the user communications
protocols or the source communications protocols, or both. Such
object specification can be listed in an object manifest stored
at the user's station, which preferably, for better control of
the transport operation, is sent to the remote object source as
35 a verifier.

By pre-specifying the desired transport functions to both ends
of the transport operation, the user and the object source, a
simplified, easy-to-use, automated transport operation which
40 conveys an information object in unattended mode, after
initiation, can be provided to any user.

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- 5 The inventive information transport module provides an information product vendor with simplicity, modularity and generality enabling information fetch operations to be easily executed by novice users, and permitting inclusion in a wide range of information products with a minimum of customization.
- 10 The invention is accordingly most suitable for electronic publishers to employ to enable their customers easily to update information products such, for example, as periodical collections, patent collections or software furnished on optical, magnetic or other storage devices.

15

In a preferred embodiment of the invention, the information object is pre-identified and integratable with the information product to which the transport module is customized to provide an augmented information product and the information transport

20 component comprises:

- a) a fetcher module configured to fetch said pre-identified object from said object source employing a pre-specified common carrier address stored in said fetcher module;
- b) a communications manager to establish and manage connection
25 to said object source under control of said fetcher module and with the assistance of said user and source communications protocols; and
- c) a fetched object integrator to locate a fetched object in a preset file area accessible to and known to said containing
30 information product;

wherein said object pre-identification, said common carrier address and said preset file area specifications are stored in said software component, whereby a workstation user of said information product can automatically effect transport and
35 integration of a pre-identified object from said object source to create an augmented information product at said workstation.

In this embodiment, any user can, easily and with varying degrees of automaticity, up to complete automation after
40 initiation of transport or upon arrival of a scheduled transport time, obtain an update object and smoothly integrate it with an original product or product shell.

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- 5 In a highly automated embodiment a containing information product, complete with transporter, is pre-coded with an update, reporting, or other schedule and, referencing the user's system clock, prompts the user for initiation of a transport operation at a scheduled date after distribution of the containing
- 10 product, or fetches a schedule. If the user's system is shut down when the pre-scheduled date arrives, such prompt may be made at the first system boot or product use after that date.

The invention provides a closed-ended information transport

15 operation between an information object source and any subscribing user, with no special commands or menu selections, which functions efficiently and, within the general parameters of an operating system's required environment, operates independently of the user's system configuration. Information

20 transport operations are carried out automatically between communications modules that know what to expect from each other, avoiding difficulties arising from open-ended communications with a wide variety of users employing a diversity of heterogenous systems.

- 25 The invention extends to methods of distributing electronic information objects, as described herein.

The inventive distribution software module and the original

30 information product are linked together to interact seamlessly. It is possible for transport of the update to proceed in a high level format facilitating integration of the update object with the original product, and the invention also provides methods and software for effecting such integration.

- 35 A broad objective of the invention which can be fulfilled by the methods and products disclosed herein is to allow a computer user to fetch and use an information product update, or even an original information product for which they have previously
- 40 received a transporter kit, with a minimum of effort, and preferably with the impression that the fetch function is an integral capability of the information product itself, rather than being executed by a separate or separable component.

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5 Another objective is to enable information transport to be easily effected across any of a selection of media or carriers, desired by the containing information product supplier. To this end the information transport component can provide protocol selection means for selecting media for real time communication
10 between said user and said remote object source employing a selection from a set of open-ended network technologies and network providers, said communication means being selectable without substantive change to said containing information product.

15

In preferred embodiments, after setup of a containing information product and a simple menu-selection enabling activation of a transport operation to occur immediately or at a subsequent date, or time, and subject to the occurrence of error
20 conditions, the information transport component effects the transport operation in an unattended manner, or without user intervention, through the steps of modem activation, dialing, network transit, handshaking with the object source, file specification, file importation, termination of the call and
25 return of control to the containing product.

Preferably, additional steps such as sending back verification of receipt of the fetched file to the object source, inspection of the fetched object and comparison with a pre-existing
30 manifest for verification of object parameters, and any necessary unpacking and decompression are effected automatically, in an unattended manner without user intervention. For seamless use of the object, it is also preferred that application file specifications, any necessary
35 location or relocation of an object file or files, and any reindexing, index creation or other product integration function that is required to enable the user to utilize the fetched object harmoniously with the original information product, be performed automatically in unattended manner without user
40 intervention, or with minimal user confirmation that one or more steps of the procedure should be executed.

Preferred embodiments of the information transport component can pack or unpack, compress or decompress, and send to or fetch

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5 files from specified locations. The transporter allows the containing information product to be set up automatically to effect high-level integration of indexes and navigational structures by letting the containing product have control when needed to import or export (and encrypt or decrypt) objects.

10

Preferably, the transporter has no direct effect on the content of the data object. Such transparency is advantageous in avoiding interdependency between the transporter and possible use of novel data structures, encryption or copy-control methods, or the like, by the containing product. For example the transporter need not know (and possibly jeopardize) any encryption technique.

20 In preferred embodiments of the invention, the module is self configuring and has the ability to scan the user's system, and preferably identifies the user's modem, or other system components or configuration software, and automatically set protocols such as the baud rate, bits parity and the like. Relevant auto-configuring capabilities and software that may be employed in practicing the invention are offered or promised by Intel Corporation in a brochure entitled "Intel Technology Briefing: Plug and Play" copyrighted 1994, the disclosure of which is hereby incorporated herein by reference thereto.

30 Preferably, the novel electronic information transporter is seamlessly embedded in the containing product so that an end user is unaware that the transporter can exist separately from the containing product. However, it is a valuable feature of the invention that the transporter be separable from the containing product to be usable with other containing products.

40 New or improved electronic information products are made possible by the novel information transporter disclosed herein, for example, CD-ROM-based products updated from online services, updatable periodical magazine collections, catalog-based computer shopping with order entry and optionally, order confirmation.

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5 Recently contemplated CD-ROM products updatable from online services

A CD-ROM-based product with online service updatability called "MICROSOFT Complete Baseball" (MICROSOFT is a trademark) was
10 announced by Microsoft Corporation apparently on March 1, 1994, with a June 15, 1994 availability date. A product brochure received by the present inventor on April 26 describes a multimedia history of baseball which can be updated with daily scores from an online service, by modem. Nothing in the sales
15 materials suggests any separable information transport components marketable for use with other information products.

In late April 1994, CompuServe® (trademark) online information service announced plans for a CD-ROM information product to be
20 used in conjunction with its online service. The CompuServe® CD-ROM information product online service is usable only with that service, and requires users of its online component to be CompuServe® member/subscribers, on terms such as described above, which terms restrict the CD-ROM product's marketability.
25 The CD-ROM content and user interface is limited to that provided by CompuServe®. Accordingly, such a dedicated CD-ROM service is not a satisfactory solution to independent publishers looking for economical update means, because they will be limited to whatever user interface and data management
30 flexibility the online vendor may provide which will substantially restrict any creative look-and-feel identity the publisher may have provided in their own product. Thus the CD-ROM product is described by CompuServe® in the statement: "It is, essentially, a new window on CompuServe..." This product
35 description does not suggest an ability to obtain updated online information for integrated local, offline use with an original information product stored on the CD-ROM, as is provided by the present invention.

40 In addition to CD-ROM-based products, various new information distribution methods and services are made possible by embodiments of the present invention. The object source can be a remote server equipped with a cooperative communications module closely molded to work effortlessly with the information

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5 transporter for distributing objects to a wide base of users.
Such a remote server can be linked to a vendor or gatewayed to
other information object sources or electronic publishers, and
exploit its smooth and efficient information transport
capabilities to act as a distribution point for such vendors,
10 sources or publishers.

Thus, the invention further comprises such a special-purpose
server designed for use with the novel information transporter
and the special-purpose server can be established as a
15 distribution service for publishers who incorporate the
information transporter in their products. The invention also
provides a method of operating a server to provide such a
software service and server-enabling software.

20 **BRIEF DESCRIPTION OF THE DRAWINGS**

One way of carrying out the invention is described in detail
below with reference to drawings which illustrate only one
specific embodiment of the invention and in which:-

25 **Figure 1** is a schematic diagram of one embodiment of an
information transport software component
according to the invention installed in a
computer workstation and communicating with a
complementary centrally located server-resident
software module for mass distribution of
30 digitized electronic information objects;

Figure 2 is a flow block diagram of an information
transport operation performed by the software
component and module of the embodiment of Figure
1;

35 **Figure 3** is a schematic diagram of a server-based
electronic distribution service employing an
inventive information transport software
component;

40 **Figure 4** is a further schematic diagram of the service
illustrated in Figure 3;

Figure 5 is a schematic diagram of a prior art
communications product employed to transport an
information object between a user and a remote

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5 server; and

Figure 6 is a schematic diagram similar to Figure 5 showing, in a comparative manner, some of the benefits that can flow to a user when an information transport software component, such as that described with reference to Figure 1, is used for a similar transport operation.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to Figure 1, the inventive software component is schematically shown in operative mode installed at a user's computer workstation. The workstation is communications-equipped for communication with remote services, for example by modem, which services are also shown schematically. Only relevant software and hardware components of the system are shown.

Relevant components at the workstation comprise operating system services 10, a containing information product 12, an information transport component or module 14, herein also referenced as a "transporter" which may be a stand-alone product or, in preferred embodiments is embedded or contained in the containing information product 12. Information transport component 14 provides a general purpose facility for sending and fetching information objects between an end user's computer (the client) and a central server. Information transport component 14 is not customized to the containing information product 12, but is intended to be used in conjunction with any of a wide range of electronic information products.

Operating system services 10 provide capabilities for the containing information product 12 and the information transport component 14 to access a readable information storage device 16 which may, for example, be an optical disk drive such as a read-only CD-ROM where product information 17 is stored. In addition, a read/write information storage device 18, for example, a conventional hard disk is accessed via the operating system services 10 for storage of a fetched additional information object 26.

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5 As necessary, different, or modified, information transporter components 14 can be supplied for users of different operating systems or system families, notably DOS (available in several versions, for example from Microsoft Corp, IBM Corporation, Novell, Inc.) Windows (trademark, Microsoft Corp.), Apple
10 Computer Corp.'s operating systems, possibly IBM Corporation's OS/2 (trademark), and any distinct operating systems developed for personal digital assistants, pen-based computers and the like.

15 Information transport component 14 also uses operating system services 10 for external communication with a communications network 20 through which the information transport component 14 can access a remote server 22, or server-client network, supporting a data storage device 24 where desired additional
20 information object 26 is located.

Communications network 20 can be any electronic distribution system suitable for transporting information objects 26 including wired and wireless common carriers such as telephone
25 networks, cable television systems or networks and mobile telecommunications or data communications networks and extends also to emerging and future systems of providing electronic communication between users of diversified equipment. The term "common carrier" is used herein to embrace all such data
30 communication systems as will reasonably meet the purposes of the invention. The term "modem" is used herein to embrace any network interface device enabling a user station to communicate on such a communications network 20.

35 While the containing information product 12 can take many different forms, as described herein, and as will also be apparent to those skilled in the art, a preferred embodiment is that of a periodically issuing publication or publications, for example, a news magazine or a collection of patents. Again, the
40 additional information object 26 could be any information of interest to the user, having some relevance to the containing information product 12, but the invention and its unique capabilities enable the additional information object 24 to be

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- 5 fully integrated with the containing product 12 in a manner that can be automated to be transparent to the user.

The inventive information transport component 14 is designed to require a minimum of user input. A bare minimum will be a user's
10 ID which can be entered by the user in a product setup and automatically accessed for information transport, or could be pre-loaded by the vendor from data supplied by the user at purchase.

- 15 A product ID is preferably pre-loaded into the containing information product 12 by the information product vendor or publisher to be available for use by the information transport component 14. However, even this may not be required. In an alternative embodiment, the product ID can be automatically
20 incorporated into the product in a product replication process that permits individualized coding of unique ID's. In most cases, a user-actuated menu selection is provided in the containing information product 12 after integration with the inventive information transport component 14 to activate
25 transport of an additional information object, and preferably, selection of transport activation drops down a menu of transport choices such as "FETCH UPDATE", "FETCH CATALOG OF UPDATES", "SEND DATA" and the like, each of which then runs automatically upon selection.

- 30 Updating can also be totally automatic, and other than an obviously desirable user notification, be completely invisible to or transparent to the user, running in background on their system, while the user's screen is available for other
35 processing such as running the containing information product 12. Where updates are made available on a known schedule, a totally automated product can be provided that fetches an update without any user intervention, on the specified release date, or as soon thereafter as the user's system, or the containing
40 information product 12, is activated. In practice, most users will probably prefer an opportunity to confirm that the fetch transaction should proceed. A preferred embodiment monitors the user's system clock and alerts a user to the arrival of an

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- 5 update release date and asks the user to confirm that the system should seek and fetch the scheduled update, if available.

Thus, the invention is particularly suitable for importing updates of information or information processing products, such as periodically issuing literature, or software upgrades. Accordingly, additional information object 24 preferably comprises updates which can be integrated with the information product 12 to provide, for example, a coherent body or continuous sequence of materials that can be commonly searched and indexed preferably in a manner giving the user the appearance of a common logical file formed from physically distinct files. The appearance of integration can be achieved by searching new and then old indexes in series and making the search and navigation logic of the containing product smart enough to combine new and old information. For example a new object can have an index file similar to that for the original information product 12. A search engine can first search the new index, then the old one, and then produce a combined set of results. Preferably, the files are not actually merged or otherwise combined as to do so could be unduly complex.

As shown in Figure 1, the containing information product 12 comprises a user interface 28 enabling the user to view, search, excerpt and print or otherwise export or process selected information items from product information 17. The user interface 28 provides standard information product features, as conventionally supplied by the product publisher, supplemented by appropriate fetch or send options to activate the features of the inventive information transport component 14.

Also shown in Figure 1 are a database management module 30 and a data structure definition module 32. Database management module 30 provides retrieval-oriented database processing of the information product including indexed searching and selective retrieval capabilities using one or more index keys such as an issue or item number, or full text searching, and may provide hypertext and hypermedia linkages. The data structure definition 32 provides the database structure of relevant files

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5 as classified by field or element, name, type, size and the
like. After successful completion of a fetch operation, control
is returned to containing information product 12 to process the
new information in essentially the same manner as the original
information, or in any other manner for which it has been
10 equipped.

Major modules comprised in the inventive information transport
component 14 are a user interface 34, a communications module 36
and fetch-send protocol 38. In addition, the information
15 transport component 14 preferably comprises its own built-in
application programming interfaces (APIs) such as a user
interface API 40 and a communications API 42, enabling the
information transport component 14's user interface and
communications modules respectively, readily to be incorporated
20 with, or plugged into a wide range of containing information
products 14. Such incorporation, in the currently best known
embodiment of the invention, is effected by software engineers
familiar with and having access to the containing information
product 12, but future developments may enable the incorporation
25 process to be effected by skilled users.

References herein to an applications programming interface (API)
will be understood to embrace any program interconnection
technique which supports direct, seamless interaction between
30 one program and another, including procedural calls, object
encapsulation, or emerging techniques like Microsoft Corp.'s
Object Linking and Embedding (OLE) or Apple Computer's Open Doc.

API 40 is responsible for providing means for the user to
35 interact with the information transport functions of the
invention and interface as seen by the user and API 42 is
responsible for handling internal processes of communications
and data management.

40 The APIs 40 and 42 are intended to enable the information
transport component 14 to be used by a range of product programs
controlling a variety of information products and to enable each
API 40 and 42 to be free to exercise flexibility and creativity

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- 5 in extending its associated user interface 28, data management module 30 and database structure 32 to fully address the provision of transport functions for the purposes described herein.
- 10 API 42 operates on a transport function level involving high level interactions between the containing product 12 or the user (or the optional user interface) and the transporter 14 before and after communications while the detailed low-level interactions between the transporter client and the server
- 15 during communications are handled by fetch-send protocol 38, without involvement of the containing product 12 or the user. "High level" is used to refer to a level at which software interacts with a user, typically in simple, readily comprehensible, function-oriented, graphic or everyday language
- 20 terms, while "low-level" refers to a level of detailed procedural interaction with an operating system, or device (modem, port etc.) in obscure program or machine language terms incomprehensible to most users.
- 25 Fetch-send protocol 38 is, in the preferred embodiment shown, a component of a novel client-server communications procedure designed to manage the transaction-oriented transmissions required to achieve satisfactory transport of desired server stored information objects, and optionally, central reporting of
- 30 user information in a predetermined format. Alternatively, one or more existing protocols could be used.

Preferably, the API's 40 and 42 and the fetch-send protocol 38 are structured to use a manifest list to control the exchange of

35 information objects. The manifest list can be provided in fetch-send protocol 38, and can be forwarded to remote server 22 to provide better efficiency, error control, and management of the operation. Alternatively the manifest list may remain resident at the user's station. The manifest is valuable

40 operating at the client station, at the API level, to specify the actions required during a transport session and can in one embodiment comprise a list of send and fetch operations which are individually controlled.

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- 5 This software mechanism, employing novel communications procedures and applications interfaces that reference an object manifest, provides a new way for performing a wide variety of information exchange functions in a simple, standardized and economical manner.

10

API Functions: 1) Product Setup

- In preferred embodiments, API 40 and API 42 include a product setup routine of an application-specific configuration, which is used by the publisher or product developer, prior to
- 15 publication, to establish seamless compatibility between the containing information product 12 and the information transport component 14 for smooth execution of desired transport functions. A completion status code is also specified.

- 20 The application-specific configuration posts user and product ID information, as needed to process password or other access code authentication and posts files information, including designation of an application work directory and a transporter work directory for performing the transporter functions of
- 25 information transport component 14.

- Additionally, the application-specific configuration sets up an appropriate decompression (or compression for send objects) technique according to the expected format and condition of
- 30 fetched information objects 46, which information is pre-coded into communications component 36.

- The application-specific configuration established through API 40 selects either a standard user interface, as furnished with
- 35 information transport component 14, or an application-controlled user interface. Control settings are established for connection problem handling, disk error handling, abort and server condition handling, access denial, unavailability of information object files and any other error situations which may occur
- 40 during transport.

If desired, optional, advanced controls for scheduled automatic calling can be included in the application-specific

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- 5 configuration used in preparing the containing information product 12 for publication.

Preparation of containing information product 12 and incorporation of information transport component 14 therein,
10 with an application specific configuration, as described is carried out prior to publication to build a customized, ready to run version of the product with automated update capability.

Communications API 42 establishes a product-specific transport
15 method choice list for selection of an appropriate file transfer protocol as between direct dial, data network dial, and other modes of transport. Communications protocols specify necessary connection parameters such as access number and network addressing or other routing information. Optional script choices
20 can provide for different modes of transport.

These product-specific configurations and protocols enable information transport component 14 to be packaged in executable form with containing information product 12, with all necessary
25 product-specific components and settings, including a standard user interface if selected, ready for inclusion in the product package.

If desired, at the option of the information product publisher,
30 a standard user interface may be included. Such an optional standard user interface can have all facilities needed to select transportable objects from a predefined list, perform all user setup functions, and invoke information object transport.

35 Additional options are standard software that would allow the user to search, view and print the transported objects totally independently of the user interface and database search components of the containing product. Both such options enable a publisher to exploit the inventive transport product for
40 efficiently and economically providing updates without having to make changes to the publisher's containing product, simply by configuring the transporter or information transport component 14 and physically including it, and the optional components,

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5 within the containing product.

A standard viewer might handle only ASCII text, but it preferably could provide for other useful formats such as standard word processor, spreadsheet or database formats, or
10 multimedia formats such as video, sound and HTML (hypertext markup language), a format becoming popular on the Internet.

API Functions: 2) User Setup

Compatibility with the user's system is effected by API 40
15 establishing a user-specific configuration, and creating or updating the necessary control files.

Parameters established in the user-specific configuration include a setup ID number to permit use of multiple setups, for
20 example, for different transport options, and a product ID number.

The user-specific configuration posts user ID information and a password or other access code authentication and posts files
25 information, including disk and drive designation for work and data directories. Autocall options and a completion status code are also specified.

API 40 provides information for communications module 36,
30 specifying a user communications protocol for the user's hardware, operating system, line configuration, and so on. Thus, for a standard telephone connection, comm port, speed (baud rate), interrupt settings, modem type and control strings, dial prefix, dial 9, pulse or tone, call waiting shut-off, and
35 the like are specified, as appropriate. Additionally, the user communications protocol includes access number and connection parameters, optionally with script selection for routing choices via data networks, and so on.

40 The resultant user-specific configuration and communications protocols generated through API 40 create a setup ready to call and places it in the designated transporter work area. A validation procedure checks entries and reports obvious errors

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5 in parameter settings.

Preferably, multiple product ID setups are provided to enable multiple information products to use the transporter with an appropriate, compatible transporter version. Preferably also,
10 the user-specific configuration accommodates shared use of the transporter work areas by multiple information product applications resident on the same user's system.

Mechanism of fetch-send protocols 38 (user) and 44 (server)
15 User fetch-send protocol 38 working in cooperation with server fetch-send protocol 44 controls the desired information object transport function, calling remote server 22 and exchanging data objects. It performs or supervises communications between the user's system and remote server 22.

20 Communications module 36 uses a setup ID number specified through API 40 or 42, selects which setup to use for a call, calls remote server 22 using protocol 38, and in a preferred embodiment, sends an object manifest comprising a send object
25 list, a fetch object list or both. Such manifest is created under control of user interface 28 from a pre-existing set of choices supplied with the product or obtained during previous update operations, or both.

30 Alternatively fetch-send protocol 38 may refer to a pre-existing manifest list stored at the user's station, or may be directed by remote server 22 to select one of multiple pre-existing manifest lists stored at the user's station. As another alternative, although it is convenient and advantageous to
35 transmit the manifest list to the server 22, the relevant status and management information can simply be used locally by communications module 36 and be integrated into the individual fetch and send protocols.

40 A send object list comprises object action codes specifying the type of server action required, if any, object names, object sizes and response object size, if any. A fetch object list comprises object names, object sizes and an object availability

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5 date.

A completed object manifest is employed to convey the status of the transport operation and to provide for additional information transport, if desired. The completed object
10 manifest adds the following to the request object manifest: send object additional information; object acceptance codes returned by server 22; time of acceptance; and a response object name, if called for by the object action code.

15 For a fetch operation, the completed object manifest adds the following to the request object manifest: fetch object additional information; a fetch confirmation or failure code; the time of completion or failure and a revised availability date if the requested fetch object was unavailable.

20 If a scheduled update or polling option is present and selected, a scheduling or polling indicator is included, and a completion of processing or import function to call through API 42 is specified.

25 A completion status code terminates the fetch or send operation and returns control to the information product application or the provided user interface.

30 Information transport using communications module 36

Communications module 36 employing the described fetch-send mechanism comprised by cooperating protocols 38 and 44 performs the functions necessary to complete an information transport operation, as described herein, under a variety of
35 circumstances, with tolerance for a common range of error conditions, open drives, inadequate disk space, lost line connections and the like, without losing control of the user's system. Using correct, verified ID, naming and routing information, the information transport operation employing the
40 inventive information transport component 14 is less error-prone than many computer users would be were they effecting the transport operation with conventional technology requiring them to enter routing and storage information and the like, manually.

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5 Communications module 36 verifies that all send objects are as specified, that all fetch objects are scheduled to be available, verifies that sufficient disk space is available for all fetch objects and for compressed transmission copies of all objects, and returns an error report if any of these requirements is not
10 fulfilled.

Communications module 36 performs communications, then returns a completed object manifest, and logs all activity in a transporter log file. If an optional scheduling/polling feature
15 is selected, the communication is deferred until the scheduled time.

These general objectives are achieved by carrying out the following process steps after an application (or optionally a
20 transporter user interface) requests a transport function:

- 1) Local validation of the request returning a failure code if the request is improperly specified.
- 2) Compression of all send objects for transmission and placing them in the designated transporter work area.
- 25 3) Connection attempts to remote server 22, returning a failure code if necessary. Connections are made via phone line or network. The system handshakes and identifies the call to the server.
- 4) Presentation of the object manifest, if utilized, for
30 validation and action.
- 5) On receiving a go-ahead, transport of each send object, logging each as sent, and receipt of object acceptance codes from the server and logs them, when received.
- 35 6) Receipt of all fetch objects from the server, placing them in the transporter work area, and logs them as received. Fetch object names may be precise, or generic or alias names may be used to request a latest installment.
- 40 7) Receipt and logging of a completed object manifest from the server. (If receipt of response objects is implied by the action codes, first receives a revised object manifest, and fetches the response objects,

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- 5 then receives the completed object manifest.)
- 8) Disconnection from server.
- 9) Decompression and unpacking of all fetch objects into
 application work area, and logs completion status.
- 10) Returns control to the application (or optional
10 transporter user interface).

The product checks the completion code, and completed object manifest to deal with any error conditions. The application performs any required import processing on fetched objects to
15 integrate the data and indexes with prior data, as desired, to enable seamless use. If desired, import processing can include, or offer as a user selection, file maintenance functions relevant to the information product including, for example, file purging to remove obsolete information files and preserve the
20 user's storage space. Specifications of files to be deleted can be included with the original product or with a fetch object. In either event the responsibility for accurate specification is passed to the vendor, relieving the user of the risk of making erroneous deletions and anxiety attendant thereon. After such
25 import processing the containing information product (or the optional separate user interface) then returns control to the user for use of the received data.

The foregoing steps are illustrated in the flow block diagram of
30 Figure 2. When containing information product 12 issues an information transport call 50, setup filter 52 runs setup routine 54 if this is a first call and no information transport setup was run on installation of containing information product 12. At block 56, an object manifest is retrieved for pre-
35 transport preparation at block 58. After prepping, a call to server 22 is established at block 60 and when the connection is made, and a handshake performed, one or more objects is transported at block 62.

40 After completion of transport and receipt of a completion manifest, server 22 is disconnected at block 64, received objects are decompressed and unpacked at block 66 and stored in a designated disk storage location at block 68. Object storage

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5 triggers containing information product 12's import processing to assimilate the information update with the original information product at block 70, following which a completion report is issued at 72 and control is returned to the containing information product 12 at 74.

10

Optional schedule function

An optional transport function module for scheduled or poll-responsive information object transport can be provided to defer the fetching of an update or to defer another information transport operation to a specified later time, or until called by the server.

The optional transport function schedules a request, waits, then automatically performs the transport operation at the scheduled time. In polling mode, it activates (and, if necessary, interrupts and then reactivates) the user station's ability to receive calls.

Mechanics of the optional transport function include a request for an ID number, an indicator for calling or polling mode and a schedule iterating a call time, a retry protocol, call activation and timing, along with an authentication procedure for the server and a completion status code.

Client-Server communications protocol

Communications between the information transport component 14, functioning as a client, and the server 22 follow a predefined communications procedure having cooperative user components comprising user fetch-send protocol 38 and server fetch-send protocol 44.

Server-client intercommunication can be broken down into five steps, a) login, b) manifest transmission, c) send operation, d) fetch operation and e) logout, as described in more detail below.

a) login

Login establishes a session with an authorized client. A

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5 handshake process between user protocol 38 and server protocol
44 identifies the user's transporter client system to remote
server 22 by product ID and user ID, and a password or other
authentication code. A failure reason code is given to rejected
clients.

10

b) manifest transmission

Preferably, via user protocol 38, the user system issues an
information object transport request manifest to server 22.
Server 22 verifies its ability to meet the request by returning
15 a manifest acknowledgment specifying which elements will be
processed and provides reason codes for declined elements.
Alternatively, as stated previously, manifest functions can be
listed in individual send and fetch protocols.

20 **c) send operation**

If the user system outputs a send object, through information
transport component 14 and protocol 38, server 22 receives and
accepts the send objects and stores them, identified by product
ID and user ID. Error control and retry mechanisms are employed
25 and successful receipt of the send object is acknowledged and
logged.

If the action code calls for a response object, the server
obtains necessary processing from a pre-designated external
30 source (corresponding to the product ID and action code) and
returns the response as a fetch object, called a response
object.

d) fetch operation

35 The server obtains requested fetch objects by product ID and
object name and forwards them to the transporter at the user.
Error control and retry mechanisms are employed and successful
transmissions are acknowledged and logged.

40 **e) logout**

The server transmits the completed object manifest to the
transporter, confirms and logs receipt, and ends the session.

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- 5 The inventive transporter compared with a conventional
 communications product
 Figures 5 and 6 illustrate schematically the simplicity and
 ease-of-use benefits the invention provides Figure 6 to a user
 100 in fetching an information object from a remote server 22 as
10 compared with the use of a conventional communications product
 (Figure 5), such, for example, as CENTRAL POINT COMMUTE
 (trademark) or PROCOM (trademark).

 In the prior art embodiment of Figure 5, many operations require
15 active participation by the user who, for example, must at least
 initiate any pre-transport preparation 104 of the information
 object, such as checking the specifications, checking work space
 available to store a fetched object and conducting any other
 preliminary checks. The user has to activate a communications
20 product 102, specify a call route, and after the call connection
 is established, specify the objects and initiate a transport
 operation. Communications product 102, operating in a
 cooperative manner with remote server 22, will execute establish
 call connection 60 after the call route (phone number) has been
25 specified and will execute transport objects 62 after the
 objects to be transported are specified by the user.
 Disconnection 64 is usually effected by a user executing a call
 termination command, which if the user is inattentive, or
 inefficient, may be delayed longer than necessary to complete
30 the transport operation, running up unnecessary line or air time
 charges.

 After completion of the transport operations, user 100 has to
 deactivate the communications product 102 and then initiate any
35 required storing and processing of the fetched product 106.
 While some of these steps may be automated via one or more batch
 files, scripts or macros, a vendor of a containing information
 product 12 has great difficulty in furnishing such a batch file
 or macro for a mass market distribution because of the different
40 systems and communications products encountered in a mass
 market, which systems and products have a variety of different
 specifications, performance characteristics and unique,
 incompatible scripting languages.

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- 5 Equally, while some more skilled users 100 might be able to write their own batch files without undue difficulty to automate some of these steps. Many users will lack the ability or the inclination to do so. Also the effort would not be justified for a single transport operation. Nor is the result of such
- 10 efforts likely to match the ease and simplicity of the results achieved by the present invention which enables even a first update to be obtained effortlessly with the software running in unattended mode, after initiation.
- 15 Figure 6 clearly shows how the inventive information transport component 14 relieves user 100 of many tedious communication functions such as activating a communications product, specifying a call route, specifying the objects to be transported and deactivating the communications product. In
- 20 addition, preferred embodiments of the invention also relieve the user of optional pre-transport preparation 104 and execution of store-and-process-fetched-product 106 if these functions are appropriate to the containing information product.
- 25 Referring to Figure 6, user 100 selects a transport operation from a user interface screen in containing information product 12, whereupon the latter calls information transport component 14 to activate transport. Information transport component 14 implements any necessary pre-transport preparation 104 and then,
- 30 employing its own communications module 36, and server fetch-send protocol 44, proceeds in unattended mode, without requiring user intervention to establish call connection 60, to execute transport object 62 and automatically perform a disconnect 64, as described herein.
- 35 Automatic transport control and disconnection is a useful feature of the invention providing economy of line or air time charges and reducing congestion on the communications carrier. Using conventional communications products, (especially with
- 40 online services) the duration of the connection may be unnecessarily extended by the delays and potential errors inherent in user control, resulting in increased communications costs and failures. The inventive transporter 14 provides

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5 software control of the connection duration, enabling it to be confined to a period sufficient to effect said unattended object transfer, enhancing efficient use of the communications medium.

Also as described, the operation can be monitored or controlled
10 by employing an object manifest and is facilitated by the use of pre-specified addresses and transport characteristics. After satisfactorily completing the transport, the information transport component 14 automatically deactivates and returns control to containing information product 12, preferably with a
15 satisfactory completion report which containing information product 12 notifies to user 100 through the containing information product 125 user interface.

If the transport object 62 was a product update, optionally a
20 store-and-process-of-fetched-object 106 is initiated by information transport component 14 and execution of the store and process operation may be passed to the containing information product 12. The user can now use the updated product.

25 As Figure 6 shows, when read, in comparison with Figure 5, the invention enables a user 100 to be relieved of all duties save for minimal selection and notification functions, while no complex added functionality is demanded of containing
30 information product 12. Optional store-and-process-or-fetched-object 106 is contemplated as requiring only minimal modification of existing containing information product 12 functions while other more complex procedural and detailed transport related functions are handled by the information
35 transport component 14.

Some non-limiting examples illustrative of practical commercial and industrial applications of the invention will now be
40 described.

Example 1: A News Magazine Distributed on CD-ROM

Some weekly news magazines offer subscriptions to a quarterly CD-ROM which contains multimedia material plus a searchable

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- 5 full- text database of the most recent quarter's weekly magazine issues and enabling application software. Newer issues are not provided until the next quarterly disc is mailed. Accordingly the CD-ROM electronic magazine product steadily becomes out of date and its value lessens.
- 10 The invention incorporates an information transport component 14 with a news magazine product stored on a CD-ROM 16, to enable a user to fetch an information object 46 in the form of new issues (and their associated search indexes) from a remote server 22,
- 15 as they become available, for example weekly. The fetched updates are stored on a consumer's computer hard disk storage device 24. Because of the size of rich content multimedia files, the updates are limited to text material including full texts of interim issues and associated files such as indexes.
- 20 Because it knows the storage location of the updates, the next CD-ROM issue can include, as an install option, or upon first access, a request to delete the old now-outdated updates from hard disk 24, creating space for new updates.
- 25 User interface 28 in conjunction with user interface 34 contains code providing a menu selection enabling a user to activate the update fetch operation and then to provide integrated or seamless access to the combined data, searching both the hard disk storage device 24 and the CD, using both sets of indexes,
- 30 so that the contents are viewable as a single collection, although an additional independent searching/viewing function for the updates could be provided, if desired.
- A product setup routine adapts the information transport
- 35 component 14 to work with the news magazine CD-ROM's existing software for creation of a user interface, searching and viewing. Communications options may be limited to direct telephone dial only. A simple user interface addition controls a setup process allowing the user to enter a unique user ID,
- 40 provided with each copy of the CD-ROM distribution disk, and to create predetermined work areas on the user's hard disk.

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5 A schedule of updates with names, dates, and files sizes is
provided in the containing news magazine product on the CD-ROM
and is accessed via user interface 28 in conjunction with user
interface 34 to create a fetch object manifest 48. Optionally,
user interface 28 in conjunction with user interface 34 creates
10 a send object manifest 48 to control transport of user
demographics for market analysis or for renewals, or the like,
in the opposite direction from the user to the server, with the
send operation being triggered whenever the next transport
operation is activated, or optionally, by allowing by allowing
15 the user to trigger it.

A fetched information object 46, such as an update, is
automatically decompressed and stored on hard disk storage
device 18 as additional information object 26 for integration
20 with the original CD-ROM product so that the user can view both
the update and the original issues, and run searches across the
entire collection.

Optionally, initial location of additional information object 26
25 may be an application work area location on storage device 18,
and communications component 36 may be pre-set to pass control
via API 42 to database management module 30 which will do
further processing to integrate additional objects in accordance
with the existing database structure 32 to provide a more
30 complete level of integration permitting, for example, viewing
of combined menus, nullification of obsoleted items, and
cross-linking of hypertext elements.

If a send object has been prepared and included in the object
35 manifest, such as a send object containing user information
entered during the install process, or subscription request
information obtained from the user, it is sent to server 22 to
be stored and identified by product and user ID for appropriate
action in due course. Acknowledgement of receipt of the send
40 object is noted by communications component 36 and passed back
to the user if such provision is made in user interface 28.

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- 5 Both the fetch and send operations are closed ended in the sense of being operations that are pre-described in the original information product and once triggered, can be completed without human intervention of any kind.
- 10 To service the automated update facility running at the user's workstation, remote server 22 is set up to accept calls from valid user ID's, and is loaded with new issue text and index files, in the form of update
- 15 information object 46, according to a publication schedule.

Example 2: Open-ended Fetch of a Supplementary News Magazine Object

- Open-ended access to supplemental information objects not described in the original information product can be obtained by providing in the original product means to fetch a directory of added features. This can be used, for example, by a news magazine publisher to provide special news features on an unplanned basis, or each weekly issue could be packaged with a directory of additional features available. The user first specifies a fetch of the new directory, or receives it along with a fetched update they have specified from a user interface menu, and then views the fetched additional features directory and initiates a fetch of a selected additional item or items in a second information object transport operation, using an information object manifest built from the new features directory.

- The original, containing product news magazine CD-ROM user interface 28 preferably has provision for importing and viewing any information objects listed on a completed fetch manifest and delivered by the information transport component 14 into the designated work areas. Alternatively, a standard information transport component 14 user interface 34 can be used to provide this function in a less integrated form.

Example 3: Retail Catalog on CD-ROM with Merchandise Order Entry at the Server

Multimedia product catalogs with 800 ordering numbers are now

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5 available on CD-ROM and also with pre-installed software
packages on new computer hard disks. In this example, the
multimedia (or text and graphic) product catalog is a read-only
information product 17 which can be furnished with an
information transport component 14 according to the invention,
10 to facilitate order placement from such electronic product
catalogs providing an easier order placing process than has
heretofore been possible. Employing the inventive information
transport component 14, a catalog vendor can enable a customer
to place the order directly, via modem, without requiring a
15 voice call and ensuing verbal product identification, by
pointing and clicking a "Place Order" or "Mark for Order" button
on the user's computer screen. The order is transported to
remote server 22 using the novel information transport component
14. Preferably a verification routine is included, requiring
20 order confirmation with a user-supplied password, and possibly
keying of the total amount to prevent unauthorized or
inadvertent product ordering, for example by children.

Order fulfillment is effected by processing of the information
25 in due course after receipt by the remote server 22 and any
additional information required centrally is collected during
product setup and held locally for transmission with an order.
For example, setup can capture the user's charge card
information,
30 shipping address, and the like and create a header for an
electronic order form.

When the user clicks the "Mark Order" button, procedures
35 supplied with the user interface 28, as modified through user
interface API 40, add order item identification information to
an electronic order form. When the user clicks the "Place
Order" button, user interface 28 triggers a transport request to
server 22, to include the order form as a send information
40 object 46. Transport of the send object, including the order
form, from the user's station to the server is executed
employing an object manifest 48, as described herein.

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- 5 If not located at a vendor's or merchant's premises, server 22 can forward received electronic orders to the merchant for fulfillment, at appropriate intervals, via a vendor link 50.

10 This simple, low cost mechanism for automated order placement, can complement telephone ordering but lacks the credit-checking and inventory status capabilities that are frequently provided by phone. However, such a catalog application could allow the user to request the fetching of an inventory and price update object for use prior to the preparation of an order.

15

Example 4: Merchandise Order Processing and Confirmation
Retail Catalog on CD-ROM

A powerful electronic merchandising tool can be provided by providing the user with a full-function order generating
20 capability and employing transporter 14 to transmit a user - created merchandise order, effortlessly and seamlessly, to a remote order-processing server. To this end, server 22 should be interfaced to the necessary merchant processing services for checking and reporting credit and inventory status.

25

An additional valuable option enables the system to apply pre-specified user instructions, previously obtained through user interface 28, to determine whether out-of-stock items are to be dropped, back-ordered, or substituted in color or other aspect.
30 This information can be added to the electronic order form object, listed in object manifest 48 and become the subject of a further transport dialog between the user's station and server 22. In this manner a sophisticated purchase transaction is completed in a substantially unattended manner (save for
35 deciding about back orders off-line), in as much as the customer does not have to maintain a phone conversation, while fully achieving the capabilities of telephone order placement. A further user benefit can be obtained by the providing a permanent record of the transaction (a stored electronic file)
40 without user intervention. This not possible with telephone ordering.

This novel, automated, modem driven, order placement system effectively shields a merchant from having to deal with the

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5 problems of establishing communications with a mass of unknown
end user computer systems, while automating the process and
relieving the merchant of the costs of telephone sales staff.
This aspect of the invention is valuable in avoiding
troublesome, support intensive, communications which are subject
10 to rapid technical change as new products are absorbed into the
marketplace. In contrast, the merchant's special purpose vendor
link 50 to the server 22, can remain relatively stable, while
the customer interface at server 22, depending upon the
sophistication and universality of the API's 40 and 42, and also
15 upon any emergent communications standards, can be adapted to
accommodate a range of future products.

Example 5: Further Applications of the Invention:

Locked information products

20 As discussed in the "BACKGROUND OF THE INVENTION" hereinabove,
some vendors, for example Microsoft Corporation, distribute
information products in locked, inaccessible form, accompanied
by (user-accessible) promotional information and demo versions.
The prospective purchaser then calls an 800 number to order the
25 product and is given a code which is entered to unlock the item
for use. The inventive information transport component 14 and
cooperative server component 22, can be used to simplify this
process, and eliminate the voice call.

30 The information transport component 14 is used to place the
order and as a subsequent step concomitant with satisfaction of
the merchants purchase requirements (payment, etc) can,
employing a suitable line entry or entries in the object
manifest 48, fetch the access code, as an information object 46,
35 in the same way as an order acknowledgment or other information
update. The user interface and data management components of
the distribution CD, or original information product, can be
programmed automatically to use the code to unlock the product.

40 Employing the novel, digital, modem-enabled communications
products of the invention, more sophisticated access codes than
are suitable for verbalizing to a caller, can be used, and may
include small programs or decompression utilities (although
these would better be stored in the locked product), or

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- 5 customer-specific coding employing user-derived information. Thus, as a safeguard against fraud, being equipped with specific user or user product information, the access code can be a key or product uniquely matched to the user's locked product copy.
- 10 **Computer Software Updates:** For distribution of updates to software products, the original distribution version of the software product can provide registered users with an appropriate ID code and update schedule. Should the revision be delayed, a revised schedule can be fetched.
- 15 **Tax or other governmental filings and exchanges:** An example of the generality of the inventive information transport system for sending and fetching well-defined information objects of many kinds is in the filing of tax returns. A send information
- 20 object can be created and manifested to submit electronic tax filings to the IRS, as described above, for electronic product order forms. A fetch object can be created to obtain updated tax forms and the program logic relating to them, and to get information on new regulations. Analogous uses will be apparent
- 25 to those skilled in the relevant arts of, for example, financial planning and portfolio management systems, to obtain current statistics, place orders, and the like.
- 30 **Packaging of Transporter with User Interface/Database Search Software Facilities**
In a modified embodiment, the inventive information transport component 14 is integrated with a general purpose user interface/database search (UI/DB) software package and tools. Such packages and tools, sometimes referred to as "authoring
- 35 packages", are now used to produce CD-ROM's and similar information products. Thus a single UI/DB product may contain the inventive information transport component 14, and be supplied to publishers to be used to develop a family or diversity of information products, as a standard tool box.
- 40 A combination of the inventive information transporter product with such UI/DB products could facilitate development of applications by allowing much of the work of integrating a containing product's user interface 28 and database functions 30

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5 and 32 (which could be controlled through the UI/DB product)
with the inventive information transport component 14 to be
performed once, in advance, by a UI/DB software vendor's skilled
specialists, for use in a diverse range of products using that
vendor's software. Such integrated offering would be
10 advantageous to both the software vendor (by enriching its
offering) and to the software vendor's publisher-customers by
facilitating the desired function.

Electronic product distribution service

15 In a valuable application of the novel electronic information
transport products of the invention, remote server 22 can be
operated to provide an electronic data product distribution
service for multiple containing information products 12, each
equipped with an information transport component 14, the whole
20 facility providing a complete network distribution service,
including network, technical and end-user support. Provision of
such a distribution service is greatly facilitated by the novel
transporter 14, described herein, the use of which for each
vended product greatly simplifies the problems of handling
25 updates to multiple products. However, such a novel service
could also be operated with conventional software communications
products by relying upon users of each to execute an appropriate
sequence of menu selection and command line instructions to
obtain an update by modem via their own pre-existing
30 communications software. Similarly, while special advantages of
seamless user adoption and integration into an original product
accrue from the use of the inventive transporter to distribute
product updates, such a distribution service can be used with
advantage to distribute any type of electronic information
35 product.

For many publishers (and for providers of UI/DB authoring
software) the task of operating a publicly available server 22,
and of supplying associated technical support to a wide base of
40 customers using a diversity of communications products, even
with the simplification benefits provided by the inventive
transport product, is a task requiring specialized skills and
staffing that a publisher, even one experienced in electronic

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- 5 publishing, will generally lack. Such a specialist capability is intimidating to provide and difficult to cost-justify for the limited number of information products that one publisher can supply.
- 10 By providing a new turnkey service or service bureau a specializing, skilled vendor would enable the publisher to avoid such burden. A provider of such a novel service can spread the costs of such operational activities and skilled staff across a large number of publishers and information products, achieving
- 15 economies of scale and specialization.

The inventive information transport products extend to software implemented at server 22, or at one or more clients or satellite servers, of a network served by server 22, to provide the

20 server-location functions of such an electronic product distribution service. Such distribution software can be separately marketed to publishers or UI/DB vendors who wish to operate such a service.

25 Gatewayed, "open" server

- Example 4, above, shows how information transporter 14, as well as server 22 can remain simple yet provide a highly general and extensible service. In that example, server 22 provides the functionality of a general-purpose transaction gateway or
- 30 interface to an external function processor. In this particular case, the external function processor gatewayed by server 22 via vendor link 50, is the merchant's order processing system, which receives the order, determines its disposition, and responds with order status information which is relayed back to server 22
- 35 for return to the customer as a response object in accord with protocols 38 and 44. The user need not be aware of such complexities, nor do the client transport components 14 of the inventive product need to be aware of, or provide information for remote routing via vendor link 50. Only the server 22 needs
- 40 this information, and server 22 needs only to know that send objects with names that fall within a specified class for a specified product ID, must be forwarded to a specified external processor, and that the corresponding responses from that

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5 processor must be routed back to an originating client as response objects. Thus the inventive information transport component 14, by virtue of its simplicity, has general applicability and many uses, as described herein and as will further be apparent to those skilled in the art.

10

In implementing an ordering service using the inventive information transport component 14, order and response objects are preferably formatted by the containing information product 12 to be consistent with existing or future electronic data interchange (EDI) standards which define protocols and formats for data interchange between customers and vendors. The information transport component 14 and the server protocol 44 provide the low-level EDI transport functions and are independent of object content defined by higher layers of the EDI protocol. Preferably, the server has added routing layer information to move objects to and from the external processor.

To provide a suitable EDI-compatible function, server 22 can be programmed with such higher layer EDI routing data for its exchanges with the merchant's external processor. Employing such a gatewayed system, a single EDI network connection can be used to connect the server 22 to a large number of different merchant processors anywhere in the world, across wide area networks and links between same, for example Internet.

30

This concept of an "open" server, providing a gatewayed pathway for information objects to travel between a wide base of users and one or more remote vendors or other object sources is greatly facilitated, or enabled, by employment of the inventive transporter 14 which effectively provides a protocol translation function enabling a simple information transport service to be offered which is easy and economical to use, both for the end user and the vendor or information supplier. Such a transport service compares favorably, for its intended information transport purposes with broader function and more complex full online services, such as COMPUSERVE (trademark), and the like, described hereinabove.

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5 Further embodiments with broadcast, subscription delivery and on-demand capabilities:

Receipt of broadcast data:

As an alternative to modem-based wireline or wireless calling to
10 a server and requesting data objects, the information transporter system of this invention can be beneficially employed in a broadcast information distribution system wherein data information objects are contained within a broadcast data stream with recipient communications devices tuned to identify
15 and receive from the broadcast specific data elements to which they are entitled.

Broadcasting can be airwave broadcasting via satellite, FM, or TV subchannels in the manner, for example, used by Mainstream
20 Data Ltd. for the broadcast of news wires. Alternatively, the broadcast data stream may be cable or line transmitted, for example, over cable television systems. Minor extensions to API's 40 and 42 could accommodate such a facility. A modified setup function could alert a user's receiving communications
25 device to watch for receipt of data objects identified as relating to the original or containing information product, and to capture and hold identified objects in temporary storage. A scheduled transport function can then be set to fetch the received data objects from temporary storage and prepare them
30 for use.

Subscription delivery: Although the invention has been described as being particularly applicable to the solution of problems arising in distributing updates of original or
35 previously purchased or delivered electronic information products, many of the benefits of the invention can be obtained, without any initial information content being delivered to the user, with the original product. The user could simply receive the information transporter 14 and all product information could
40 be received subsequently, after installing the information transporter 14, in the form of fetch objects transmitted from a remote server or other suitable source. For example, a newsletter service could provide a disk with the transporter and a user interface, but with no initial information content.

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5 Information-on-demand services: In another embodiment, providing an information product on demand service, vendors can freely distribute a novel electronic marketing product comprising a transporter on diskette, along with a simple user interface and a catalog of information product items available
10 from the vendor, without including the products themselves. Such an electronic marketing product could be distributed through the mail, as a magazine insert giveaway, or through any other suitable marketing medium. The transporter could be activated at any time by the user to call in and fetch a
15 cataloged product, as well as a current catalog, possibly after sending a credit card order form, or the product price could be paid to the vendor by obtaining the product from a 900 number providing vendor reimbursement from the telephone network.

20 Open architecture online service access

In a further aspect, the invention provides an information transport component 14 that functions as universal or generic client interface software, enabling a user client to work with
any one or more of many online server-based information
25 distribution services.

Many online information distribution services used to disseminate electronic publications comprise intelligent user interfaces which employ a client component running on a
30 customer's personal computer (PC) to communicate with a central server facility operated by the online service, by means of a proprietary protocol. The client interface packages are proprietary to a particular online service.

35 Prospective publishers wishing to offer electronic products online, contract with online service providers to enable customers to use the online service's client software to access the publisher's material and related online communications services (bulletin boards, etc.) on the services' servers. The
40 publisher is limited to using the presentation facilities provided by the user interface in the online service's client software. This limitation impedes migration of publisher offerings and makes it difficult for either a customer or a

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- 5 publisher to swing information transport component 14 access from one service provider to another because each service requires its own software package.

Third party interface developers cannot contribute to such
10 online interfaces for a publisher without the cooperation of the online service provider which may be difficult or impossible to obtain. Accordingly, only limited user interfaces with moderate sophistication and variety can be offered.

- 15 Accordingly in another aspect, to provide open architecture online service communication, the inventive information transport component 14 can be embodied as a flexible client interface which can be actuated to operate with any one of a number of online services by providing a generic client
20 interface foundation API (application program interface) combined with a set of translators and protocol drivers capable of communicating the user's functional requests to any one of a set of online services, using their corresponding proprietary protocols.

- 25 In this aspect the invention permits publishers to develop highly sophisticated and individualized user interfaces independently of the limitations of the online service providers' capabilities. Such enhanced user interfaces are
30 attractive to publishers seeking differentiation of their products by providing an appealing individualized interface with a signature look and feel. In contrast, online service providers seeking to economically carry content from many publishers provide generic interfaces acceptable to all.

- 35 By incorporating operational translators for a number of online service protocols, which translators fully adhere to the detailed specifications of each protocol, a multi-service capability can be provided.

- 40 Online services generally provide similar types of services with nearly standard functions and similar user interfaces. Major service types include bulletin board, chat, electronic mail,

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- 5 document browsing, and database search. Use of creative typography, layout, graphics, and other artistic elements to offer the presentation quality and variety typical of print media is desired by publishers using this medium.
- 10 The invention facilitates this end by providing open development platforms for development of advanced interfaces while shielding developers from the complex details of communication with an online server. The shielding is accomplished by providing an API which supports communications service requests at a simple
- 15 functional request level.

Referring to Figure 3, multiple targeted online services 80, can be accessed by a client interface 82 comprising any of multiple graphical user interfaces 84 driving a generic API 86 which

20 works with plug-in translator/communicator modules 88 which are provided to communicate one to each targeted online service 80. Modules 88 mimic the online service's protocols, so as to be essentially indistinguishable from the proprietary interfaces normally used. A communications manager 90 receives input from

25 API 86 and outputs through protocol mapper 92 which selects the appropriate protocol.

In this embodiment, for use with full-function online services, the functions of API 86 and protocol 88 are extended to support

30 extended, open-ended interactive sessions and the more varied client-server interaction needs of session-oriented interactive online applications such as bulletin board posting and browsing, online chat, electronic mail, database and menu browsing, and database search.

35 Similarly, in the aspect shown in Figure 3, the invention can be provided with the same kind of additional flexibility with regard to the user's connection to server 22 as the invention can provide for more basic fetch and send functions. While the

40 inventive client server protocol 38 and 44 is particularly suited to the functions described, other existing or future services and corresponding protocols could be used, if necessary with adaptation, to provide workable services for use in

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- 5 conjunction with transport component 14. Such use may require modification of communications module 36 and protocol 38 by the addition of a protocol mapper 92 and appropriate server protocol plug-in 88 to communicate to an alternative server.
- 10 In either case, such added flexibility in use of the inventive product increases a publisher's choices in selecting server and network facilities through which to distribute information products, and enables the publisher to offer fully customized user interfaces for use with multiple, or any one of multiple
- 15 server and network services which do not provide for such customization. In this embodiment of the inventive transport component, a containing product can offer a unique custom interface and provide for access to additional information products from such varied source facilities as the Internet,
- 20 full function online services, emerging groupware network services, conventional bulletin board systems, and future network services using wireless or cable television technology.

While the invention can provide a flexible, generic API, in some

25 circumstances, an existing third-party API designed for use with a single specific online service can be combined with an embedded transporter and server protocol mapper to allow products designed to use the third-party API to employ any of multiple servers for distribution, avoiding commercial

30 distribution restraints associated with that API, for example use of a particular server.

The inventive protocol mapper 92 can insulate a containing information product from the variations among such services, and

35 can allow a single such information product to be transported through a variety of such services, and to later be moved to other such services by simply selecting an alternative protocol mapper. Multiple such protocol mappers can be packaged within a given information product to permit alternatives to be selected

40 by the end-user from a list. Thus the invention further permits information products and related UI/DB authoring tools to be service-independent and neutral.

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- 5 Figure 4 provides an overview of the use of the inventive client interface accessing multiple publications via multiple remote online services, as well as multiple locally mounted data sources and storing additional retrieved data locally.
- 10 Enhancements can enable a publisher's service to provide integrated, seamless access to content distributed over several different online services; to seamlessly combine access to both online and local CD-ROM-based content; and to coexist with and share resources with other publishers' services on the user's
- 15 PC.

In summary, the invention provides, in this aspect, a simple, easy-to-use multi-protocol capability that enables an electronic information object to be transported from a publisher to a wide

20 base of users by any one of a number of online services, without sacrificing individual product identity.

Recursive updating of the transporter

Another application of the inventive information transport

25 product, or transporter, is a recursive use to update itself, in the same manner that the transporter can update a containing information product. This method can be useful in a variety of ways, including to upgrade the transporter by the addition of new protocol components, new compression techniques, or new

30 network access methods.

An important class of such self-updates is to provide added flexibility in specifying network access procedures. For example, the user setup routine could be extended into a two

35 stage process. In a first stage, each user's transporter calls in to a common pre-set phone number, in order to fetch a second phone number selected according to the user's particular product, location, or some other parameter. The second phone number, or other address, can then placed in the setup as an

40 update, to be used in subsequent transport operations.

This two-stage method can provide efficient use of a single pre-set toll-free 800 number for an initial call from any number of

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- 5 different products, which initial call yields a second number corresponding to a specific Product ID, which number is used for subsequent calls.

10 In an advantageous embodiment, the second number is not toll free and may include vendor charges, in the manner of a 900 number. This arrangement enables a system in which users do not pay for initial setup calls (and any failed connections which might result from initial setup problems), but do pay long-distance toll charges, and per call vendor fees if the publisher
15 so desires, for subsequent product information transport from the second number. This two-number process can be carried out without requiring any phone number entry or selection by the user. Additionally, the second number can readily be changed whenever desired by the publisher, even after product discs have
20 been shipped.

User's station

References herein to a user's station, workstation, computer or terminal will be understood to embrace any "information
25 appliance" or intelligent device having the basic computer-like functions of programmed logic, storage and presentation, or having the ability to support an operating system for managing user input-output with a processor, including intelligent cable television controllers, video game players, information kiosks,
30 wired and wireless personal communicators, and even system controllers such as automotive computers.

Benefits provided by the invention

Employing the novel information transport component 14
35 interacting with remote server 22 through communications protocols 38 and 44, the invention enables the following advantageous objectives and other benefits to be achieved:

- i) simple and easy execution of one or more fetch or send transactions to or from a remote server, by an
40 ordinary, unskilled user with no human interaction at either end being necessary after initiation;
- ii) automated transport of predefined information objects between client and server in a closed-ended fashion,

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- 5 without burdening a client-based user with complex routing logic; and
- iii) creation of an economic, easy-to-use, function-specific, self-contained information transport component 14 software module suitable for mass
- 10 distribution in a containing information product.

The preferred use of an object manifest in a transport control mechanism which includes transporting the object manifest between client user and server, and referencing the object

15 manifest by user fetch-send protocol 38 and server fetch-send protocol 44 facilitates achievement of the following additional objectives:

- iv) simple, tight-knit control of the communication process and of error handling; and
- 20 v) creation of a transport control mechanism, and thence of an information transport component 14, which operates smoothly and transparently to the user and independently of the information object content or of the nature of the application.
- 25 The invention thus provides an information transport software component which can be employed to transport a wide variety of data objects or applications and can be easily incorporated in many different information products to provide multiple novel containing information products 12 with built-in automated
- 30 updatability or upgradability executable at an appropriate time by simple, user-menu selection or automatically.

Further benefits

In addition to the benefits of a powerful and efficient

35 information transport method, use of a standard, formalized transporter, its API, and client-server protocol, pursuant to the teachings of the invention disclosed herein, can provide any or all of the following significant benefits to users, information product vendors, application vendors, service

40 providers, tool vendors or others:

- vi) use of a standardized facility to perform a well-defined function in a known way (with available implementations for a varied and expanding set of

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- 5 hardware and software platforms);
- vii) reliance on a standardized facility that can be extensively tested and proven reliable across a wide variety of equipment and conditions;
- 10 viii) reduced need for information product developers (and users, and user interface/database search software vendors) to know and understand the complexities (and rapid evolution) of data communications;
- ix) ability to build a single functional interface that can smoothly employ a dynamically expanding variety of communications facilities and technologies;
- 15 x) ability to obtain operations and user support services relating to the difficult task of managing a server and its communications with large numbers of end-users;
- 20 xi) user-recognition of the novel information transport facility across a range of unrelated products, establishing a positive brand cachet benefiting users and vendors alike;
- xii) ability to package the transporter facility with other tools, such as a UI(user interface) and database search capability to extend the value of those tools economically and with the ability to gain the benefits described above; and
- 25
- xiii) control of communications costs and failures by
- 30 elimination of human intervention, with its attendant time-consuming delays and errors, from the period during which the user's station is connected in real time communication with remote server 22.
- 35 Stated succinctly, by having the novel information transport component rely entirely on a containing information product for all user interface and information presentation functions, there need be no restrictions on the creativity of the containing product imposed by the needs of a third party communications
- 40 product. Thus the containing information product can present transport functions with any desired look and feel.

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5 Another advantage of the information transport system of the invention is the avoidance of difficult or complex navigation tasks, and the use of simple direct dial communications which are suitable for sessions that are short and infrequent. The inventive information transport products described herein are
10 consistent with or readily adaptable to the needs of many publishers of a diversity of materials, which needs are commonly centered on discrete products and content.

A further advantage of the invention, from the point of view of
15 publishers, is that because the call is customer initiated, the customer pays transport costs (telephone line charges), simplifying costing for the publisher who avoids having to figure shipment or other transportation costs before sale and build these costs into the price of the product or update.

20 The inventive approach to mass distribution of electronic information products described herein can also provide advantages in high-value environments such as those of Counterpoint Publishing's Federal Register products cited
25 hereinabove, providing a more seamless integration of the fetching of updates received via modem (and selected and extracted by the user from the "Daily Federal Register") with the original product on CD-ROM, the "CD Federal Register". Product installation can be simplified, and a separate user
30 invocation of, and interface to, a general-purpose communications package can be avoided. In addition, by employing the user's pre-existing modem and avoiding need for a general purpose communications product license, significant cost savings can be obtained.

35 The better to comprehend its possible applications and enhancements, embodiments of the invention can be grouped in four levels, as a follows.

40 Level zero A novel basic transport function embeddable in any of a range of electronic information products to provide economical unattended updates.

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5 **Level One** Basic transporter 14 incorporating API's 40 and 42
adds a powerful new capability to be used with an electronic
information product's custom user interface database management
facility for seamless integration of an update with an original
product. Optionally, the transporter can also integrate with
10 relevant third-party packages such as authoring packages.

Level One (Server enhanced) Adds server operation and user
support features enabling publishers to outsource tasks which
may be difficult or unfamiliar to them.

15

Level Two Adds optional translation or use of alternative
server protocols enabling an embeddable transporter product to
work with many different servers or services including, for
example, standard BBS's, Internet servers, and special transport
20 services such as those offered or proposed by communications
providers such as AT&T, MCI, CompuServe, America Online and
cable television systems.

Level Three Adds a full online service user interface API with
25 correspondingly enhanced client-server protocols to provide for
full-function online service sessions with user interface
control and with ability to work with a range of online
services, providing a publisher with flexibility in their use of
existing and emerging services.

30

Route selection for online access

The invention extends to the use of a multiple protocol, network
access capability, using protocols as described herein, to
provide a single product with online access over whatever
35 network is appropriate, best or more efficient for a given user.
An important embodiment of this aspect of the invention is to
combine direct dial access for users who have no established
data network access, with use of for example, the Internet or
other TCP/IP network, for users who do have such access. Such a
40 selection could be user selectable, or automatic.

Such embodiments of the invention are expected to have
particular value as the Internet (or a follow-on variant)

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5 becomes widespread, but not universal. Publishers and marketers can use the Internet to reach many users, but will need an alternative direct path to offer access to the rest of a mass market of modem equipped computer owners who are not connected to the Internet. The network path will offer better
10 functionality, speed and economy to those who are set-up to use it, but a solution that is limited to that population will be incomplete. The expense and difficulty of establishing Internet access will probably limit its reach for many years. The invention provides an elegant solution to this problem and in
15 providing a multipath hybrid approach to problems of connection, access and object transport may have advantages over the World Wide Web for some applications.

Technically, this is advantageous because Internet access is
20 still hard to set up, but easy to use once it is set up. The multipath hybrid transporter of the invention does not have to address the problem of setting up Internet access (although it might), but can use it if access is available at the user's station and work without it if not.

25

Network charging systems

Effective flexible use of information networks by consumers and diverse businesses requires flexible alternatives for charging for network services. At present, the ubiquitous Internet has a
30 simple and singular charging system wherein users pay their own network access fees, usually on a monthly account basis with usage time-related charges. This is not satisfactory for casual or occasional users. The invention provides a solution to this problem permitting reverse charging by authorized users to
35 consenting sponsors.

At a basic level, an extension of the invention for TCP/IP networks, or the like, can provide for collect calls to be identified at each network access point, and for session
40 negotiation functions to be provided to determine if a called server, operated for example by a commercial sponsor, will accept charges before a call is completed. Hosts that accept collect calls can have the option of selectively controlling

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5 access to specific account IDs. If desired, usage data can be collected by the network operator and used to generate bills and call details to the sponsoring agency. This provides collect call and toll-free 800-number functions enabling sponsors to be accessed via the Internet or the like, without requiring users
10 to commit to monthly signup fees. Also, network access software can be stripped down and embodied in an original information product (for example a catalog on CD-ROM) providing simplified or automated installation for the user. Other modifications can permit more complex or sponsor-customized software to be
15 downloaded from the sponsor, using the transporter.

900-number functions can also be provided, much as they are now done in proprietary fashion on some X.25 networks, to enable called product vendors to collect service fees. To do this one
20 or more billing gateway servers is established to manage session setup for calls using specially charged account IDs. These billing servers validate the caller's account and credit status, identify the pricing algorithms to be applied for the called server, and maintain an activity record for end-user billing.

25 The modifications of the X.25 mechanisms consist of straightforward adjustments to deal with the details of how these networks define node addresses, and how they set up and break down connections. These modifications could be done by an
30 individual network access provider, with the restriction that they apply only among users and servers directly connected to their service or using their proprietary software, or more desirably, they could be applied on a standard basis by many or all network access providers, using X.75-like protocols, so that
35 they interwork smoothly throughout a global system such as the Internet.

The addition of flexible charging capabilities to the Internet and similar TCP/IP networks expands the usefulness of these
40 networks for casual or ad-hoc use, and for information providers who offer services for fee, or who offer marketing or shopping services they wish to sponsor. This is particularly valuable to users of our embedded transporter, but it is also useful to

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5 users of conventional online browsers or other access tools.

While an illustrative embodiment of the invention has been described above, it is, of course, understood that various modifications will be apparent to those of ordinary skill in the art. Such modifications are within the spirit and scope of the invention, which is limited and defined only by the appended claims.

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5 Claims

Claim 1. A computer-implemented information transport software product for transport of an information object to a user's computer station from a remote object source provided with a source communications module having source protocols the user's station being in real time communication with the remote object source, which software product contains a user communications module having user protocols for information transport, characterized in that the software product comprises a separately suppliable software component for use with any one of multiple electronic information products for mass distribution of electronic information objects to users of a diversity of uncoordinated communications-equipped computer stations by enabling the users to fetch an electronic information object from an object source specified with the information product, in an online fetch operation proceeding in unattended mode after activation, the information transport software component being adaptable to each multiple information product to have a user interface in the information product for activation of the object transport from source to user in unattended mode after initiation, wherein the user protocols of the information transport component are preset to specify user station functions of the unattended object transport and the source protocols are preset to specify source functions of the information object transport, the user protocols being co-operative with and known to the source protocols to effect the unattended object transport automatically after initiation at the user station.

Claim 2. An information transport component according to claim 1 comprising object send means for unattended transport of a send object from the user's station to the remote object source.

Claim 3. An information transport component according to claim 1 characterized in that the object send means comprise a user-activatable selection in the user interface, and send specifications in the user and source protocols.

Claim 4. An information transport component according to claim 1 characterized in that the user communications protocols

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5 specify a remote object source address and characterized in
that object parameters selected from the group consisting of a
file name, file names, file size, file location, file content
and file format are specified in the communications protocols
and the source communications protocols.

10

Claim 5. An information transport component according to claim
1 characterized in that the object specification is listed in
an object manifest stored at the user's station.

15 Claim 6. An information transport component according to claim
5 characterized in that the object manifest is sent to the
remote object source as a verifier to assist control of the
transport operation.

20 Claim 7. An information transport component according to claim
1, comprising a high-level functional interface permitting the
information product to remain unaware of and uninvolved in the
technical and operational details of the communications process.

25 Claim 8. An information transport component according to claim
1, characterized in that the electronic information product
provides user interface and information presentation functions
for the information object transport whereby the information
product can provide information transport functions with any
30 desired look and feel unconstrained by a communications module.

Claim 9. An information transport component according to claim
1 characterized in that the fetched information object is pre-
identified and integratable with the information product to
35 which the transport component is customized to provide an
augmented information product.

Claim 10. An information transport component according to claim
9 characterized in that the information transport component
40 comprises:

- a) a fetcher module configured to fetch the pre-
identified object from the object source employing a
pre-specified common carrier address stored in the

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- 5 fetcher module;
- b) a communications manager to establish and manage
 connection to the object source under control of the
 fetcher module and with the assistance of the user and
 source communications protocols; and
- 10 c) a fetched object integrator to locate a fetched object
 in a preset file area accessible to and known to the
 containing information product;

 characterized in that the object pre-identification, the common
carrier address and the preset file area specifications are

15 stored in the software component, whereby a workstation user of
the information product can automatically effect transport and
integration of a pre-identified object from the object source to
create an augmented information product at the workstation.

- 20 **Claim 11.** An information transport component according to claim
1 characterized in that the information transport component
performs a containerized, standard transport operation, the
transport operation being transparent to any high-level
formatting of the transported information object, and
- 25 essentially repeatable for a wide variety of different
information objects.

Claim 12. An information transport component according to claim
1 having means to pack or unpack, compress or decompress, and

30 send files to or fetch files from specified locations.

Claim 13. An information transport component according to claim
1 characterized in that the transporter allows the containing
information product to be set up automatically to effect high-

35 level integration of indexes and navigational structures by
letting the containing product have control to import or export
or to encrypt or decrypt objects.

Claim 14. An information transport component according to claim
40 1 characterized in that the novel electronic information
transporter is seamlessly embedded in the containing product and
is separable from the containing product to be usable with other
containing products.

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5 **Claim 15.** An information transport component according to claim 1 characterized in that the communications module is self-configuring and includes a workstation surveyor providing workstation configuration parameters.

10 **Claim 16.** An information transport component according to claim 1, characterized in that the information transport component provides protocol selection means for selecting media for real time communication between the user and the remote object source employing a selection from a set of open-ended network
15 technologies and network providers, the communication means being selectable without substantive change to the information product.

Claim 17. An information transport component according to claim
20 1 characterized in that the remote object source comprises a remote server capable of establishing real time communication with the information transport component for object transport.

Claim 18. A information transport component according to claim 1
25 characterized in that the information product is a collection of issues of a periodical publication and the pre-identified object comprises an update issue.

Claim 19. An information transport component according to claim
30 1 characterized in that the information product is a software application and the pre-identified object comprises an upgrade for the software application.

Claim 20. An information transport component according to claim
35 1 supplied as a free-standing embeddable component for incorporation in an information product the information transport component comprising only such functionality as is required for the information object transport operation.

Claim 21. An information transport component according to claim 1 characterized in that the real time communication has a software-controlled duration confined to a period sufficient to effect the unattended object transfer.

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Claim 22. A computer-implemented electronic information product comprising information content and an information transport component according to claim 1.

Claim 23. A computer-implemented information transport software component separately suppliable for use with any one of multiple electronic information products for mass distribution of electronic information objects from users of a diversity of uncoordinated communications-equipped computer stations by enabling the users to send an electronic information object to a remote center specified with the information product, in an online send operation proceeding in unattended mode after activation, the information transport software component being readily customized to an individual information product to have a user interface in the information product for activation of unattended transport of an information object from the user's computer station to the remote center, the user's station being in real time communication with the remote sender characterized in that the information transport component contains a user communications module having user protocols specifying user station functions of the unattended object transport and the remote center is supplied with a remote center communications module having remote center protocols specifying remote center functions of the information object transport, the user protocols being co-operative with and known to the remote center protocols to effect the unattended object transport automatically after initiation at the user station.

Claim 24. An information transport component according to claim 23 characterized in that the electronic information product comprises a merchant's product disclosure and the send object comprises a user's order electronically prepared from the product disclosure whereby the order can be placed with the remote center electronically in unattended mode without requiring a voice call.

Claim 25. A computer-implementable electronic information transporter characterized by being supplied as a free-standing embeddable component for incorporation in an information product

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for transporting information objects related to the information product, between a widespread base of users of a diversity of computer stations and a specified remote center, the transporter comprising:

- a) a user interface in the information product for activation of unattended transport of at least one the information object; and
- b) a user communications module cooperative with and known to a remote center communications module the user and remote center communications modules effecting unattended online transport of the information objects after activation;

wherein the information transport component comprises only such functionality as is required for the transport of the information objects.

Claim 26. A transporter according to claim 25 characterized by being operative to provide unattended information object transport only between an aforesaid user and at least one remote address, the at least one address being pre-specified to the transporter and including an address for the remote center.

Claim 27. An electronic information product distribution remote server for use in transporting information objects to multiple information transport components according to claim 1 located at the remote center and being supplied with the source communications protocols.

Claim 28. A distribution server according to claim 27 in combination with a link to a remote vendor, whereby the users can transport objects to or from the vendor via the distribution server.

Claim 29. A distribution server according to claim 27 the server being gatewayed to other information object sources.

Claim 30. A method of distributing predetermined electronic information objects from a remote object source to users of a diversity of uncoordinated communications-equipped computer

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stations, the method being characterized by comprising:

- a) supplying the users with a separable information transport component containing user communications protocols specifying user station functions of a specified object transport operation; and
- b) supplying the remote object source with a source information object and source communications protocols specifying source functions of the unattended object transport operation, the source communications protocol being co-operative with the user communications protocol to effect the pre-specified information object transport operation;

whereby the transport operation can proceed in unattended mode after initiation at the user's station.

Claim 31. A method according to claim 30 characterized in that after setup of a containing information product and a simple menu-selection activation of a transport operation the information transport component effects the transport operation in an unattended manner, without user intervention, through steps of modem activation, dialing, handshaking with the object source, file specification, file importation, termination of the call and return of control to the containing product.

Claim 32. A method according to claim 30 comprising additional steps of sending back verification of receipt of the fetched file to the object source, inspection of the fetched object and comparison with a pre-existing manifest for verification of object parameters, any necessary unpacking and decompression being effected automatically, in an unattended manner without user intervention.

Claim 33. A method according to claim 30 characterized in that additional steps of application file specifying, location or relocation of an object file or files, indexing, reindexing, index creation or use or hypertext or other product integration function that is required to enable the user to utilize the fetched object harmoniously with the original information product, be performed automatically in unattended manner without

user intervention.

Claim 34. In combination, an electronic information product and an information transport component, the electronic information product being distributed to a heterogenous base of users, individual ones of the users having unspecified hardware platforms for implementation of the electronic information product, and a distribution server for distributing to requesting ones of the base of users an electronic information object related to the computer-implemented electronic information product, characterized in that the information transport component is a separable component embedded in said information product and comprises a user communications module having preset functions for communicating with the distribution server to retrieve the information object from the distribution server and characterized in that the distribution server has a communications protocol module specifically cooperative with the user communications module, whereby the user and server communications modules can effect transport of the electronic information object from the server to the user in unattended mode after initiation of the transport.

Claim 35. A combination according to claim 34 characterized in that the functions preset into the user communication module comprise:

- i) a communications network address for accessing the server;
- ii) a user handshake process cooperative with the server handshake process to establish communications with the server; and
- iii) an access path to the stored copy of the electronic information object;

wherein the server communications module is accessible at the network address and comprises a server handshake process cooperative with the user handshake process.

Claim 36. A combination according to claim 34 comprising additionally the electronic information products having individually configured versions of the embedded communications module, the distribution server being configured to cooperate

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with each the information product's embedded communications module and storing copies of respective additional information objects related to the electronic information products, whereby the distribution server can cooperate with multiple information products distributed to the heterogenous base of users to transport a respective related information object to any requesting user in the user base in unattended mode after initiation.

Claim 37. A combination according to claim 34 characterized by comprising an object specification listed in an object manifest stored at the user's station wherein the information object transport is automatically monitored for compliance with the object specification.

Claim 38. A combination according to claim 34 characterized in that the electronic information product is supplied to the user base on a CD-ROM or other high capacity data storage medium and the user and server communications modules communicate via modems across a telephone network.

Claim 39. A combination according to claim 34 characterized in that the user and server communications modules are cooperative to transport, in unattended mode after initiation, a send information object from a user in the user base to the distribution server, wherein the combination further comprises a remote link from the distribution server to a remote vendor of the information product whereby the user can fetch one or more information objects from, and send one or more information objects to the remote vendor.

Claim 40. A combination according to claim 38 characterized in that the information product comprises a catalog and the remote vendor is a catalog merchant whereby the combination provides an automated remote ordering system.

Claim 41. A combination according to claim 34 characterized in that the information transport component includes a product-specific user interface with the look and feel of the electronic

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information product, the electronic information object is stored on a compact disk and the remote server is accessed via an online service from the product-specific user interface.

Claim 42. A combination according to claim 34 characterized by comprising multiple the remote servers connected to be accessed by multiple targeted online services, wherein the information transport component comprises a product-specific user interface with the look and feel of the electronic information product and comprises multiple server protocol translation modules to communicate one to each the targeted online service, the protocol translation modules mimicking the online services' protocols, so as to simulate to the online service a proprietary client interface furnished to users for accessing the service.

Claim 43. A combination according to claim 42 characterized in that the information transport component further comprises a generic API driven by the user interface and cooperative with the protocol translation modules, a protocol mapper to select an appropriate online service protocol and a communications manager to receive input from the generic API outputs through the protocol mapper.

Claim 44. A combination according to claim 43 characterized in that the information transport component comprises multiple the protocol mappers and associated protocol translation modules.

Claim 45. A combination according to claim 34 characterized in that the electronic information object includes transporter update information to modify the operation of the information transport component whereby the information transport component operates recursively to update itself.

Claim 46. A combination according to claim 34 characterized in that the transporter update information comprises new protocol components, new compression techniques, or new network access methods.

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Claim 47. A combination according to claim 46 characterized in that the information transport component comprises a two-stage user setup routine having a first stage wherein the transport component calls a pre-set phone number to fetch an electronic information object comprising a second phone number selected according to a user-specific parameter for incorporation in the transport component's setup as an update for routing subsequent information object transport operations.

Claim 48. A combination according to claim 47 characterized in that the pre-set phone number is a toll-free number and the second phone number is a tolled number for communication regarding a specific user-selected information product and is used for subsequent calls.

Claim 49. A distribution server for distributing an electronic information object related to a computer-implemented electronic information product to a heterogeneous base of users of the information product, individual ones of the users having unspecified hardware platforms, characterized in that the information product including an embedded user communications module, the user communications module having preset functions for communicating with the distribution server to retrieve the information object from the distribution server wherein the distribution server comprises:

- a) a communications protocol module specifically cooperative with the user communications module, and
 - b) a stored copy of the electronic information object;
- whereby the user and server communications modules can effect transport of the electronic information object from the server to the user in unattended mode after initiation of the transport.

Claim 50. A distribution server according to claim 49, characterized in that the server communications module is accessible at a prespecified network address and comprises a server handshake process cooperative with a user handshake process being a one of the functions preset into the user communications module and the electronic information object is

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stored at a location having a storage path preset in the user communications module, the network address and the user handshake process also being ones of the functions preset into the user communications module.

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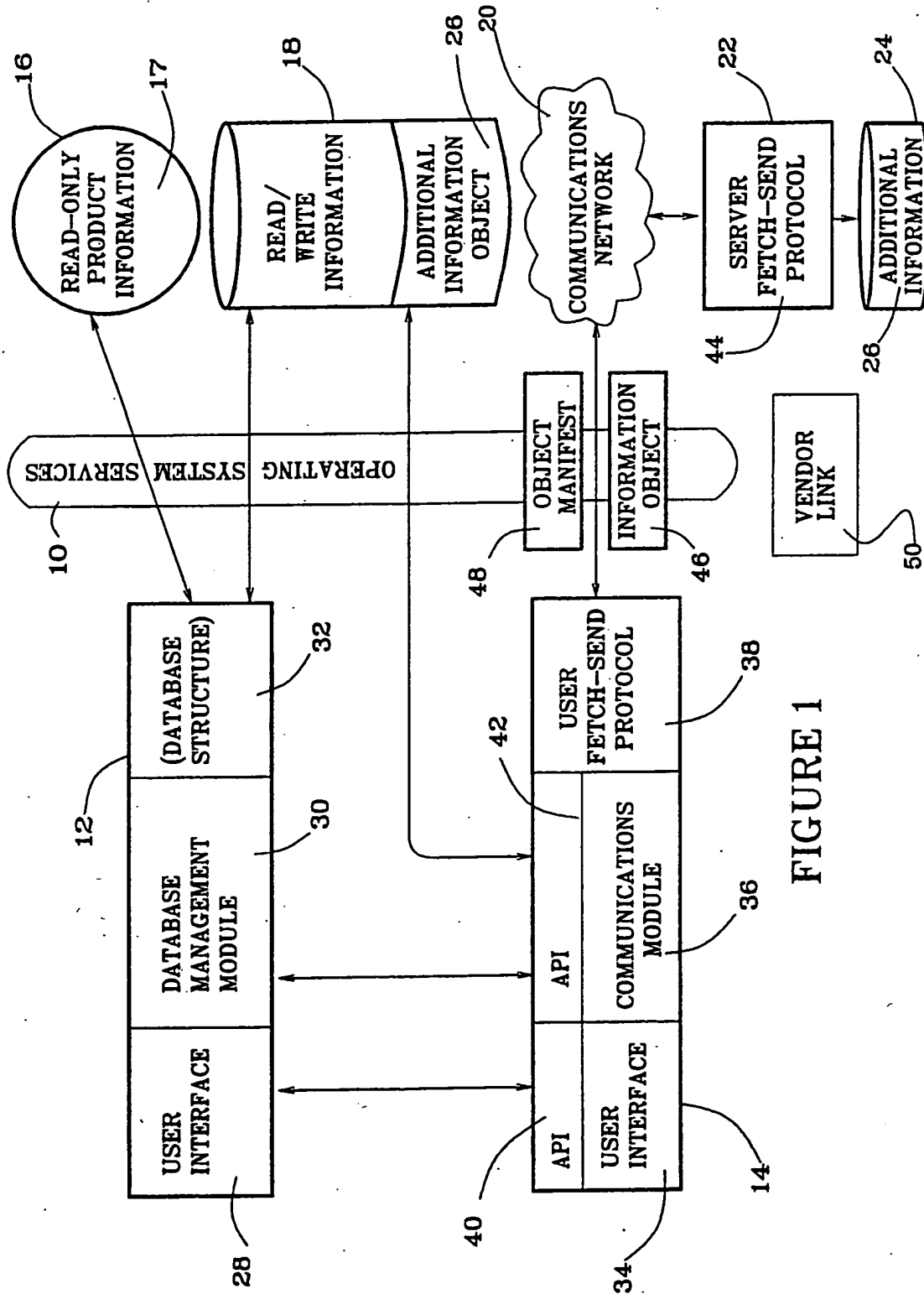


FIGURE 1

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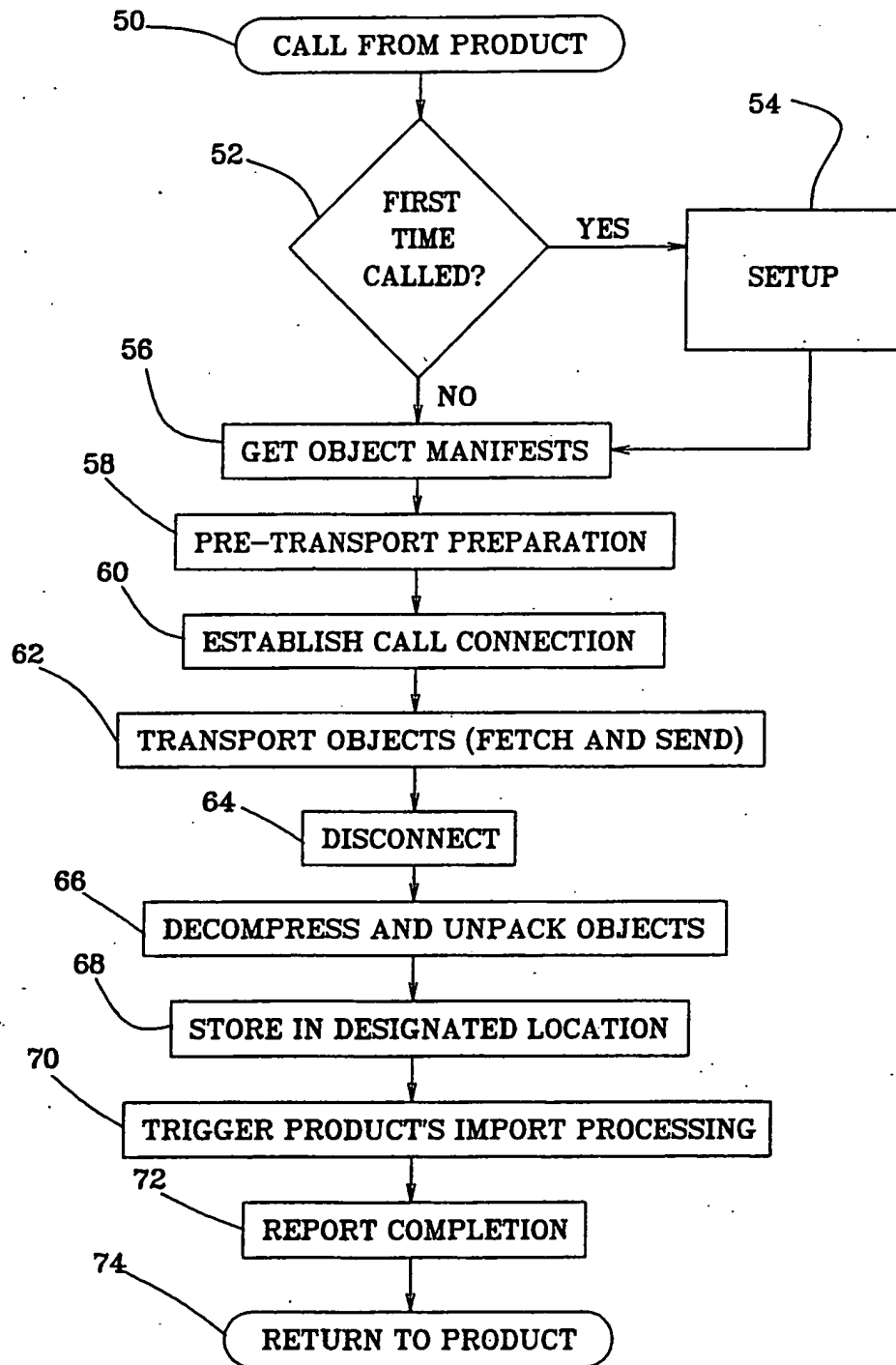


FIGURE 2

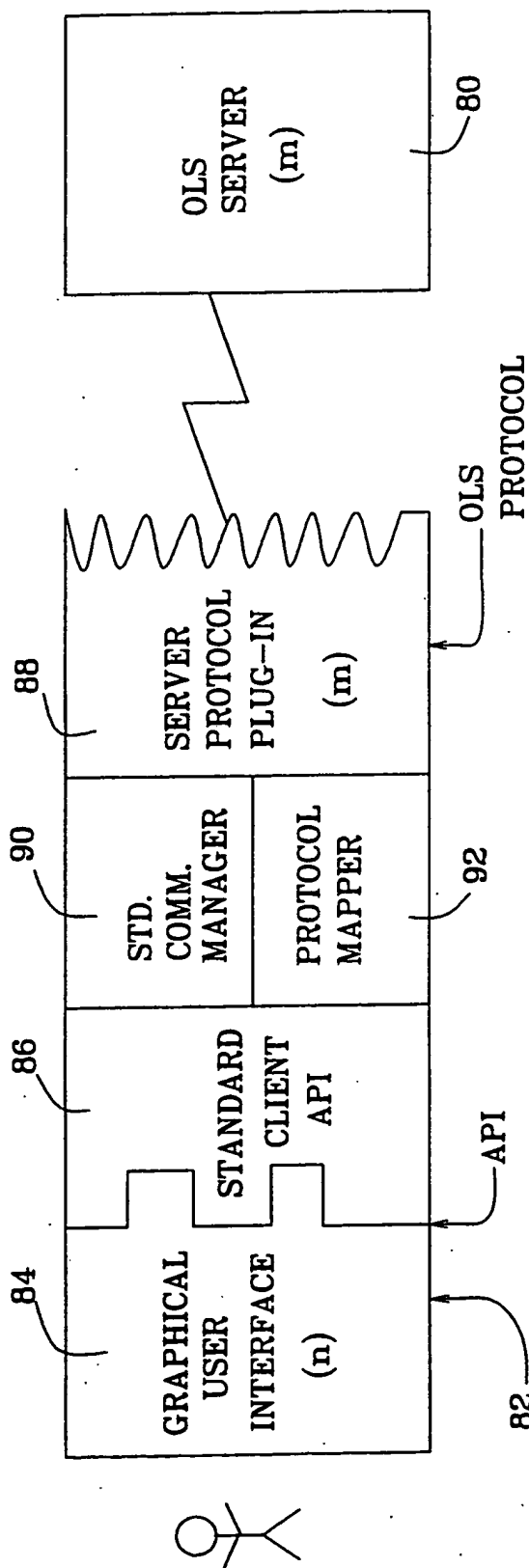


FIGURE 3

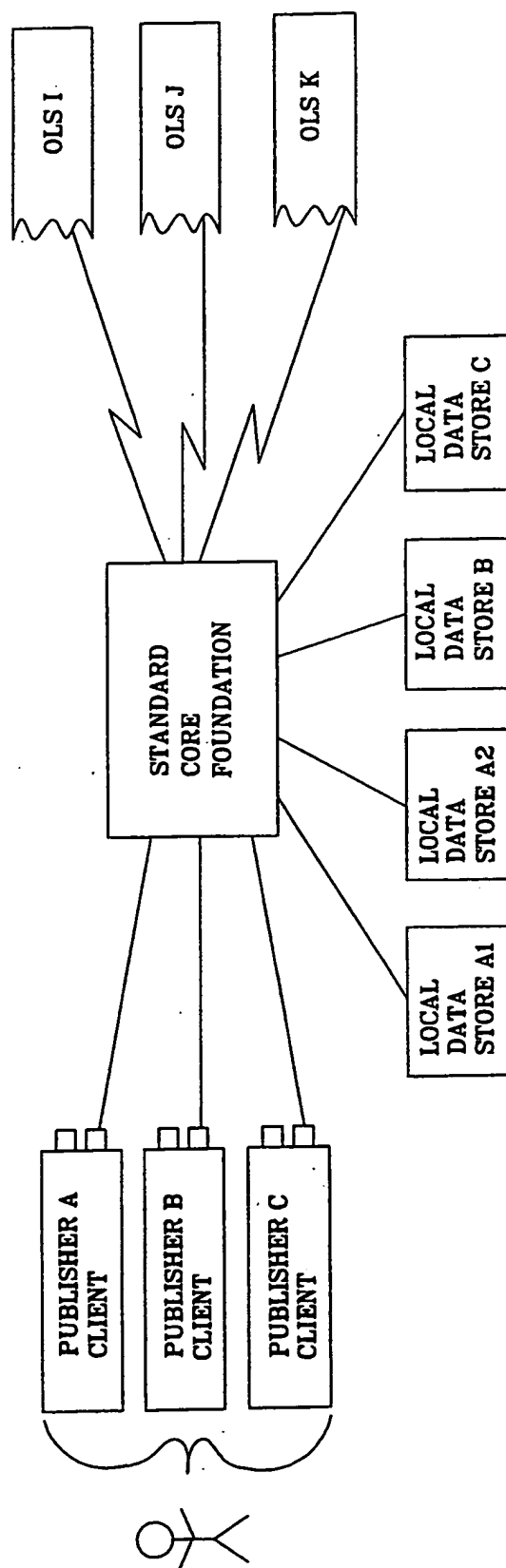


FIGURE 4

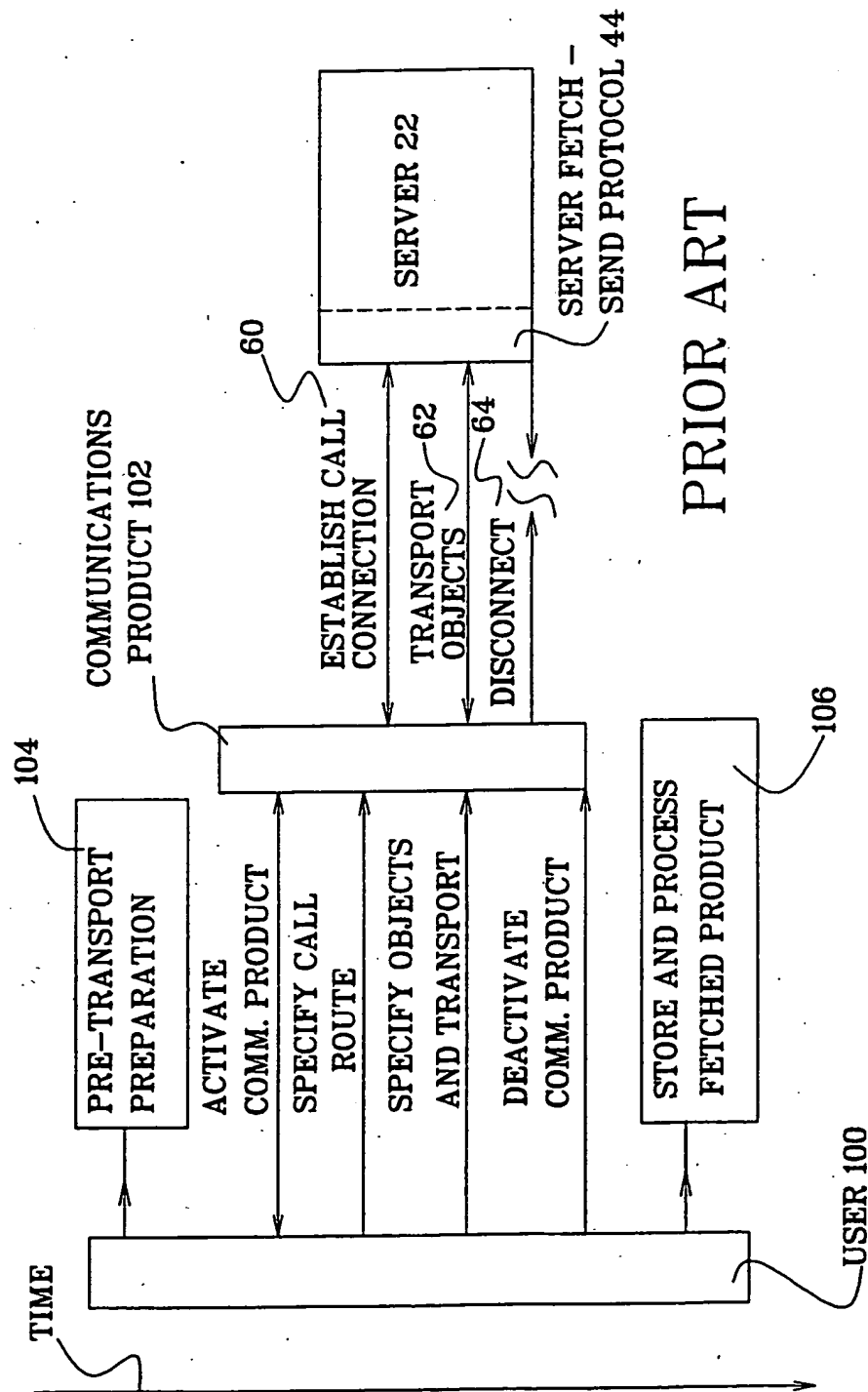


FIGURE 5

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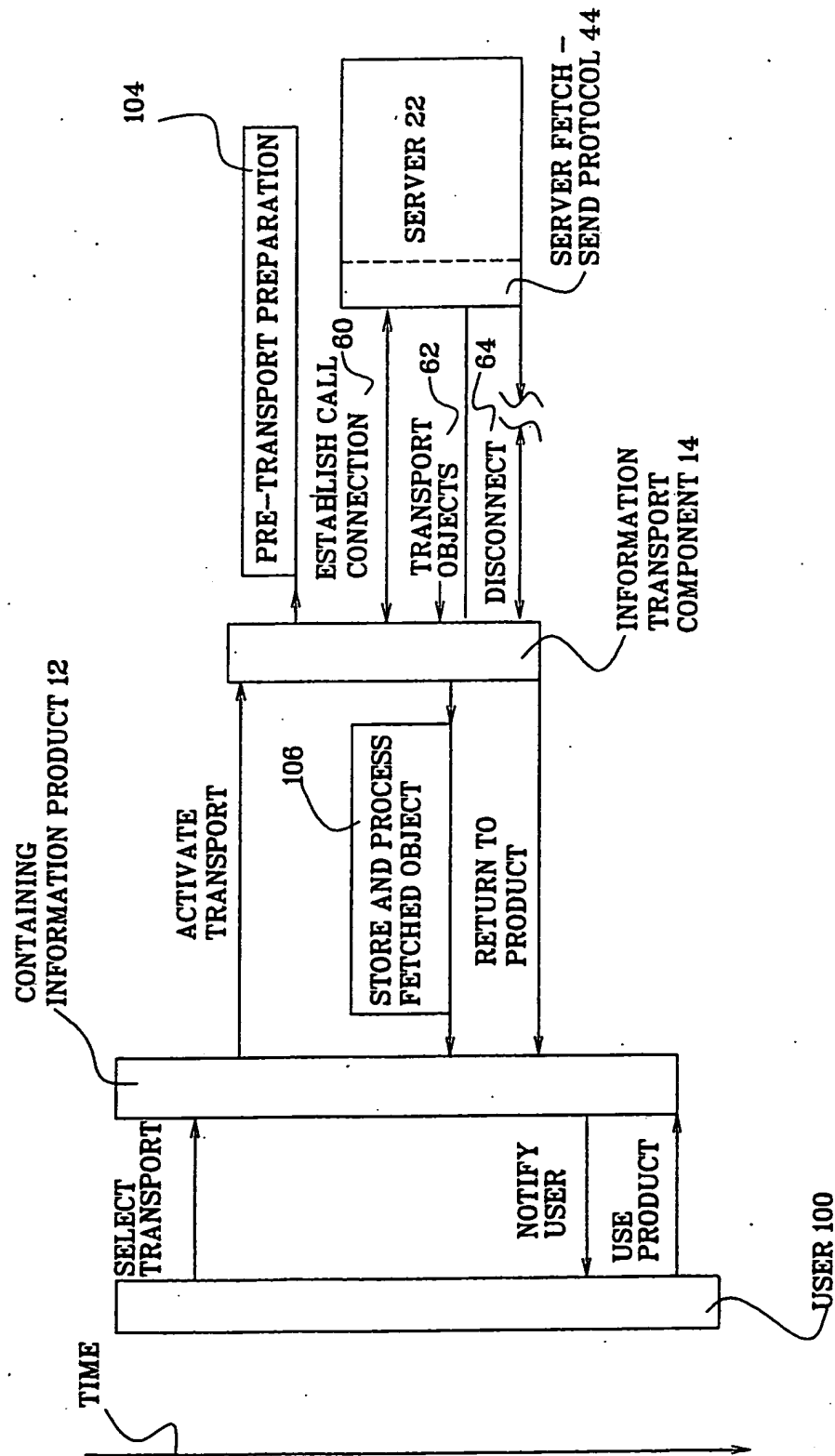


FIGURE 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/06399

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :G06F 9/455

US CL :395/500, 575,

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 395/500, 575

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

IEEE COMPUTER MAGAZINE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, PROQUEST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	The FRYE Utilities for Networks, "Software Update and Distribution System" Manual, 1992, published by Frye Computer Systems, Inc., pages 1-185	1-50

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be part of particular relevance	*X*	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y*	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z*	document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means		
P document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

09 AUGUST 1995

Date of mailing of the international search report

25 SEP 1995

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